THE IRON AGE

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Output Exceeds New Orders

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No Pig Iron Buying for Next Year—An Early End of Ore Shipments

The steel mills are scarcely holding their position, production and shipments being in excess of new orders. Prices show continued irregularity, with competition more pronounced as the possibility of a return of free contract buying grows more remote.

The Pittsburgh district is still leading in the percentage of capacity employed, but there as elsewhere each week's operations are determined by what the week brings forth, so that prophecy as to the duration of the present high tide in specifications is of little value. The Steel Corporation, which is doing much more at its Central Western plants than at those in the Chicago district, has 72 per cent. of its blast furnace capacity going this week and about 75 per cent. of its ingot capacity.

It is needless to catalogue all the forms of finished material in referring to the price situation. But steel bars are reported to be under more pressure in the Chicago district, and iron bars are weaker there. Plates, sheets, tin plates and wire products are named in Pittsburgh reports as showing closer competition.

The demand for rails is spasmodic, but the orders in hand for this year promise better rolling schedules than has been commonly known. The Ensley mill has little open space for the next four months. This week it reports a contract of 22,050 tons with the Southern Railway. The Colorado mill is booked for most of the four months. At Gary the outlook for rail tonnage is not so promising. The report of a recent rail order coming to this country from Argentina is unfounded.

In the structural trade developments have been favorable. For the New York Central Terminal, New York, 5000 tons has been placed with the American Bridge Company, which also has the 4000 tons for the Ritz-Carlton Hotel in Philadelphia. At its Eastern plants this company is now working 95 per cent. of capacity, and work now in hand will keep all its shops busy at their present rate for nearly six months. The Thompson Starrett Company has the general contract for the Field Museum at Chicago, 8000 to 10,000 tons. Pending business includes 5000 tons of bridges for the Boston & Albany, 4000 tons for the Aeolian Building, New York, and 5000 tons for the new post office at Washington, D. C. The American Bridge Company is low bidder on 7,000 tons for the St. Louis bridge approach.

The principal inquiry before the wrought pipe mills is for 63 miles of 10-inch pipe for the Medina Gas & Fuel Company's projected line from Lima to Mansfield, Ohio.

Operations of tin plate mills increased in the past

week. Reports persist of sales at $3.60 per base box, Pittsburgh.

Expectations of a good fall trade are general in the wire trade, but meantime operations are light, the jobbing trade keeping its stocks at a minimum.

The pig iron market reflects plainly the prevailing uncertainty about future demand. Melters would ordinarily be buying in considerable quantities by this time for the new year; yet the closer working of supply and demand as merchant production has been cut down in recent weeks has caused no anxiety to cover for 1912. Some inquiry is up, but buyers are not convinced that the higher prices now asked for next year can be held.

At Pittsburgh a sanitary supply company bought 7,000 tons for its Northern plants, mostly at $13.50 Valley furnace and $13.25 at a Pennsylvania furnace which has a higher than the Valley freight. There is nothing like a buying movement in foundry iron and Southern furnaces, while asking $10.25 and higher for this year's shipment, are doing little business.

A large amount of Southern iron was sold at the $10 level earlier in the month, one interest disposing of over 70,000 tons in one week. Some of this iron was bought on speculation by dealers and is therefore yet to come upon the market.

The expectation of a secondary buying movement in Lake Superior ores has been disappointed. Only about 150,000 tons was sold in scattering lots in the past two weeks. Preparations are now making by the leading interest for an early end of the shipping season. Unless unexpected improvement comes to the pig iron trade the season's movement of Lake ores will not exceed 30,000,000 tons.

Steel and Commodity Prices

For a proper appreciation of the position of the steel market general attention needs to be directed to the lowness of steel prices as compared with commodity prices in general. It is a fairly familiar fact that while the various compilations of commodity index prices show no material reduction since 1907 steel prices have suffered a large decline since that year, but the full bearing of this fact may possibly be lost if emphasis is not frequently put upon it. A fact not so generally recognized, probably, is that while since last May commodity prices have shown an advancing tendency steel prices have shown a slight declining tendency, so that the gap is being widened at the present time.

The highest prices of steel products in recent times were attained just at the close of the highly prosperous three-year period extending from late in 1904 to 1907. Steel prices advanced during that period, but very moderately indeed considering the excess of demand over capacity and the eagerness of buyers to place orders. Frequently in that period mills were from three to six months behind in delivery of standard products, and consumers sometimes suffered hardship through inability to secure deliveries as early as desired. Of course the degree of hardship was not to be measured directly by the apparent distance by which mills were behind in deliveries, for keen buyers anticipated conditions and frequently placed specifications in advance of their real necessities. Nevertheless, it will doubtless be generally admitted that the mills were extremely moderate in their price advances during that period, and the price level reached by October, 1907, was by no means an extreme one. It was, for instance, very much lower than the hight reached in the 1899 boom, when prices soared without restraint, although production costs in that year were very much lower than eight years later.

From the price level of October, 1907, finished steel products, exclusive of rails, have declined to the present date about $8.75 per net ton, or about $10 per gross ton, a decline of 21 or 22 per cent. Consulting the index numbers we find that Bradstreet shows a decline from October, 1907, to July, 1911, from 8.851 to 8.594, which is less than 3 per cent. The index number of the Bureau of Labor, which has just been published, is carried only through December, 1910; but from October, 1907, to that month the change is from 131.0 to 131.6, which is an advance of about one-half of one per cent. The Bradstreet standard, it may be explained, is a purely nominal one, the index number being merely the sum of the values of a great number of commodities, expressed in their usual terms. The Bureau of Labor's basis, on the other hand, is the average price of the commodities considered during the ten years 1890 to 1899 inclusive, that average being taken as 100. The Bradstreet number has declined only slightly from December to July, so that it may be taken roundly that commodity prices in general show no appreciable decline from the level of October, 1907, to the present, whereas prices of finished steel products outside of rails have declined more than 20 per cent., and the importance of this fact is increased by the observation already made, that while since May the Bradstreet number has slightly advanced, the prices of steel products have shown a slight declining tendency.

Comparing present steel prices with the lowest on record, made in 1897, the advance to the present moment may be estimated at approximately 30 per cent. Taking the Bradstreet numbers for 1897 and for July, 1911, an increase of exactly 40 per cent. is shown, while the Bureau of Labor's number shows an advance from 1897 to December, 1910, of 46 per cent.

Thus, compared with these standards, prices of steel products are lower than they were in 1897, when nominally they were at the lowest. That iron and steel manufacture has carried a burden greater than most industries in the matter of advancing costs in the past dozen years is well known. In common with other industries it has had to meet higher wage rates, increased cost of various supplies and higher freight rates. Not in common with other industries, but as a special burden, it has had to bear a very considerable decrease in the average iron content of the ores available. This is a physical change, having no connection with the higher standard of values everywhere present, and one which no invention or improvement can overcome and which is not subject to the possibility of adjustment or compensation in future by a lower standard of wage or commodity values being restored. The richest ores are used up, and their equal is not being found. The increased content of impurity is a drag all along the line, involving the mining, transport and reduction of a larger quantity of ore per ton of pig iron produced, while in addition ore must be sought farther underground.

Unquestionably the iron industry has found some compensations. In various ways it has improved its practice, or already an unbearable condition would have been reached. If the citation of the fact that present steel prices relative to commodity prices in general are lower, both by comparison with 1907 and by comparison with 1897, merely serves to show that

the industry has instituted economies and improvements, the showing is an important one in these days of indiscriminate criticism of iron and steel manufacturers for having indulged in excesses of various sorts.

Any Readjustment Will Include Labor

The avowed object of many of the legislative proposals that have been brought forward at Washington is to reduce prices of commodities and, presumably, to meet the long-standing complaints of the high cost of living. Anti-trust proceedings and investigations are begun in large part with the purpose of reducing the prices of so-called trust products. Bills for tariff revision are introduced apparently in the expectation that with lower duties will come lower prices in the home market. In all this not the slightest indication is given by the sponsors of these measures that along with the general scaling down of commodities which they seek there will come any reduction in the price of labor.

Now and then the view is expressed by careful observers of present tendencies that if any serious disturbance of prices of manufactured products comes out of the present agitation, an accompanying liquidation in labor cannot be avoided. In the iron trade, in which there has been an important reduction in prices, practically no change has been made in wages, and manufacturers generally have been averse to wage reductions. So far as the iron and metal-working trades are concerned there is no indication today that manufacturers will take any initiative in this direction. Should any such step become necessary it would no doubt be promptly challenged with the familiar charge that it was in "retaliation" for recent legislative attacks upon business.

It needs to be remembered, in the midst of all these efforts for a downward revision of values, that the old-time economic laws have not been abolished. If duties are reduced sufficiently to lower prices of any domestic product there will be just one choice for American labor engaged in the manufacture of that product—either to bear a reduction in wages while making the same output as before or to increase output. The profits of manufacturing operations have been by no means adequate in recent years. If one basic industry be taken as an example—that represented by the blast furnaces of the country which make pig iron for sale in the open market—there have been nearly four years of unsatisfactory prices and diminishing profits. It is safe to say that in many cases there has been a loss on pig iron sold in the past six months. There are concerns in the metal trades—foundries and machine shops—whose profits in the same period have been meager indeed. The returns from manufacturing operations in practically all lines have undergone very serious readjustment in recent years, while wages have been either maintained, or, as in the case of the railroads, materially advanced.

The plain intent of the notification concerning railroad wages given by the last administration at Washington, in the depression following the panic of 1907, was that any readjustments of values must be borne entirely by capital. So now it is evidently the idea of those who are aiming to reduce the American standard of values, that while the returns on investments may be reduced, the wage earner, with undiminished pay, will be able to buy more cheaply than before. The public mind, in holding before it the profits of the great promotions of ten to fifteen years ago and the fortunes made by the few who sold out their business at extravagant prices, forgets that the 6 and 7 per cent. dividends which the owners of these selfsame industries are getting today are exceedingly modest returns on a manufacturing investment. The tens of thousands of stockholders in the great industrial companies of today constitute a very important percentage of the community of "manufacturers" who presumably are to bear the brunt of the revisions in values now aimed at through legislation. The belief that labor will benefit by the shaking down of prices, or at least will escape unhurt while the returns to capital are further curtailed appears to be entertained by some who should know better. For them and any who are deluded into following their lead there is the certain prospect of a rude awakening.

Permanency in Shop Buildings

Shacks for shop buildings were vehemently urged a few years ago. It was argued that permanent structures for housing the machinery of the works were unwise. Equipment and methods were likely to get antiquated and a change to take advantage of developments in apparatus or to provide for expansion was sure to require costly alterations to buildings. The injunction was only here and there taken very seriously. New plants were constantly erected of a degree of permanency calculated to inspire confidence in the stability of the enterprise and in many cases actually to beautify the surroundings. Such works, however, were not built as new ventures in new fields, but as enlargements of existing establishments. To the requirements was given careful study of the possibilities of the future. The young industry usually starts in a modest way in structures formerly occupied by institutions which have prospered, and in the event of successful growth it is in a position to select for its needs. It is recognized that old established going works are often found in buildings illy adapted to their needs, but these were launched before plant operation was given the scientific attention it now receives. The permanent or substantial buildings, involving a considerable money outlay and early exhibiting their shortcomings, were in fact the text on which the sermon of mere shelters for men and machinery was preached.

The present tendency toward high-class inclosures as well as contents for factories spells the transition which is taking place in the industrial world in this country. Speed in achieving results was formerly the watchword. The population was stretching itself as quickly as possible over large areas. Months of deliberation over the inauguration of some project could not be afforded. Now territories to be supplied are more restricted or more definite. A better index to probable demand is at hand. The question is not the immediate, but the more distant future, and we are to see an increasing amount of care in reaching decisions. Europe has long stood for an absolutely sure policy and the character of buildings and railroads attest it. Its development has been altogether different from that which has brought the spotlight to these shores. Guesses regarding successes of ventures are not now so often made and the better opportunity to gauge the future appears to justify what may be termed permanency of construction.

The Steel Corporation Helps Its Competitors

The Stanley Committee, in probing the affairs of the United States Steel Corporation, failed to bring out some of the good deeds of that great institution. The American consumers of pig tin, on more than one occasion, have had reason to be thankful for the existence of this huge commercial organization. Through the tin plate mills of its subsidiary, the American Sheet & Tin Plate Company, it is by far the largest consumer of tin not only in the United States but in the world, and its purchases of this important commodity are therefore on a correspondingly large scale. Producing no tin in this country, we are dependent on outside sources for our supply. The tin market is frequently subjected to speculative influences, centered largely in London, where advantage is taken of every contingency to compel American consumers to pay high prices.

Within the past few months the price of tin has been forced to an extravagant hight, and American consumers have been considerably distressed on this account. The recent strike of workmen in London has further greatly interfered with the movement of tin through the warehouses of that city, that being the transshipping point for vessels arriving from the East Indies. On this subject the following excerpt is made from the market report of C. S. Trench & Co., New York, dated August 17:

> With us the feature has been the inability to get usual supplies on account of the London strike. On an average 2500 tons per month should reach us from London. Not a ton has been shipped from London in two weeks, and no likelihood of any for another week; in fact, we hear September 3 given as the first date of a London steamer to bring tin. This has reduced the stock of Straits tin here to virtually nothing other than the stocks being carried by the United States Steel Corporation. Whether from astute judgment and foresight, or from luck (we favor the former view) this large consumer has, during the late corner in London and the squeeze here, been in a most comfortable position, and has been generous in helping out its fellow consumers during these periods. The fact that it has been able to replace for future delivery at lower prices than it has sold its spot surplus to needful consumers is only an incident, and does not depreciate its service to the market.

If the United States Steel Corporation had chosen to use all its advantages for its own purposes and to ignore its competitors the opportunity here existed for reaping important benefits. This would have been ordinary commercial selfishness, and would by no means have been illegal restraint of trade. The Steel Corporation chose to do otherwise, however, and thus signally manifested its liberality and magnanimity. Will practices of this kind find a place in the report of the Stanley Committee?

Increasing Liability for Fatal Accidents

The Connecticut Legislature is proceeding favorably with a bill which would increase the amount of liability for death due to accident from $5,000 to $10,000, with a minimum of $1,000. The $5,000 figure is the usual one when death comes quickly to the victim, without "conscious suffering." Custom has decreed this to be a fair limit. To double it is a very radical step. The new limit applies, presumably, in accidents to employees as well as in cases where a public service corporation is the responsible party. Thus it is another reason why a workmen's compensation law may prove to be less of a burden than the existing employer's liability acts. The wisdom of the change is to be doubted, however. If the limit is now too low the increase should be a more gradual one. It may be argued that the statute does not compel the payment of $10,000 for each death, but merely increases the maximum liability. Nevertheless the ordinary jury nowadays does not hesitate to make the maximum award for the loss of a life, especially against corporations, even though from an economic as against a sentimental standpoint the award be too great.

Railroad Equipment Orders.—Some large orders for railroad equipment were placed during the week. Locomotive buying is on the increase. Among the orders placed were the following: The Missouri Pacific, 15 Pacific type locomotives from the American Locomotive Company; the Erie, 40 Mikado locomotives, divided between the American Locomotive Company and the Baldwin Locomotive Works, and 20 to be built in its own shops; the Government Railways of Japan, 12 Pacific type locomotives from the American Locomotive Company; Pennsylvania Railroad, 15 passenger locomotives, 10 freight locomotives and 10 switching locomotives to be built at its Altoona shops; St. Louis & San Francisco, 12 switching engines from the Baldwin Locomotive Works; Eastern Illinois, 8 engines of Pacific type from the Baldwin Locomotive Works. Car orders have been placed as follows: St. Louis & San Francisco, 250 flat cars; Chicago & Gulf, 50 flat cars and 50 box cars from the Central Locomotive Works; Swift & Co., 50 tank cars from the Pressed Steel Car Company. The St. Louis & San Francisco is inquiring for 250 flat cars and the Pennsylvania Lines West is asking bids on 700 assorted freight cars.

The John W. Danforth Company, Buffalo, N. Y., has just received formal notification from the Secretary of the Navy of the acceptance of a recent proposal tendered at Washington for the complete mechanical equipment at the Mare Island Navy Yard, San Francisco, Cal. This is one of the most important navy yards on the Pacific coast, and the contract includes the equipment for one of the largest power houses in the Navy Department. The work includes condensers and pumps for large electrical generating units, driven by steam turbines, switchboard and electrical connections, boiler feed pumps, motor-driven centrifugal water supply pumps, feed water heaters and all of the power plant piping connecting the boilers and the various power plant apparatus. The Danforth Company secured the contract in competition with New York, Philadelphia and San Francisco bidders. The work is to be completed in nine months' time. Reports from Washington state that the contract price is approximately $105,000.

The Society of Automobile Engineers is now issuing leaflets showing the mechanical standards recommended by its professional committees and accepted by the society. The society is the custodian of the standards formerly established by the Association of Licensed Automobile Manufacturers known as A. L. A. M. standards. Of these one of the less successful was the yoke and eye rod end standard. To supersede this standard, the society has now announced the S. A. E. standard for drop-forged yoke and eye rod ends.

A two-cycle single-cylinder oil engine of 65-hp. capacity is shortly to be brought out by the Remington Oil Engine Company, Stamford, Conn. It is to follow the design of other Remington oil engines, and is intended for electric lighting units, having close speed regulation. Its normal speed is 225 r.p.m.

Two dryers were recently shipped to Varanger Fjord, Norway, 400 miles inside of the Arctic Circle, by the Ruggles-Coles Engineering Company, New York. Each machine is rated to dry 55,000 lb. of iron ore concentrates per hour.

It is stated that the Blandon Rolling Mills, near Reading, Pa., has started its 8- and 11-in. mills, which will be operated on full time. For the past year this department has been running very irregularly.

The Princess Furnace Company, Glen Wilton, Va., will blow out its furnace this week.

Furnace No. 3 of the Woodward Iron Company, Woodward, Ala., has blown out.

The Automobile Outlook for 1912

The growth of automobile manufacturing in this country since 1907 has been so great that automobile makers have probably become, next to the railroad interests, the most important class of purchasers of metal working machinery and especially of machine tools. The recession in the automobile business in the early part of this year was keenly felt by the machinery trade, although it lasted but a short time, and its recovery was marked by renewed machinery buying. A canvass of some 30 representative automobile manufacturers made by *The Iron Age*, with a view to ascertaining the outlook for their industry for 1912, brings out the fact that while perhaps 20 per cent. of those written to will not produce as many cars in 1911 as in 1910, all of them expect at least to equal their 1910 production next year. In some cases the manufacturers report that in their experience the schedule of production for this year resulted in a surplus of cars. The other replies indicate for next year an increase over the 1911 production, ranging all the way from 30 to 75 per cent. Some manufacturers are unwilling to state for publication what their production was in the last two years and how 1912 will compare with 1911 and 1910. Others are willing to make public their expectations, and their replies indicate that they are looking forward to a year of large business.

The Thomas B. Jeffery Company, Kenosha, Wis., which makes the Rambler cars, is figuring on a minimum production of 3,500 cars for 1912 as against 2,500 made in 1910 and 2,000 in 1911. This company is now enlarging its plant to provide additional manufacturing space, approximating 85,000 sq. ft. It is also planning the erection of service buildings in Boston, New York, Chicago and San Francisco and will need additional machinery for both the factory and service buildings.

The Lozier Motor Company, Detroit, states that the increase in its manufacture for the year 1912 will be fully 75 per cent. and that it is planning for extensive additions to be made within the next six months.

The Ford Motor Company, Detroit, produced 20,000 cars in 1910. Its 1911 production will amount to 40,000 cars, and it anticipates a production of 75,000 cars in 1912.

The Willys-Overland Company, Toledo, Ohio, is now building a four-story body manufacturing plant, 250 x 400 ft., and a large die shop to increase its output to 20,000 cars as against 17,000 to be produced this year. This company has also just completed a large engineering building and has added to its power plant.

The Mack Brothers Motor Car Company, Allentown, Pa., expects to increase its productive facilities 50 per cent. over those of 1910 and consequently will enlarge its plant about one-third so as to be able to produce between 1,600 and 1,700 trucks.

Much of the added business that is coming to the automobile makers in this country is placed abroad. The value of exports of automobiles and parts in the fiscal year ending June 30, 1911, was $15,503,000, against $11,190,000 in 1910 and $5,992,000 in 1909. The import trade in motor cars is steadily decreasing. In the 12 months ending June 30, 1911, the imports consisted of 888 machines valued at $1,898,000, against 1,473 valued at $2,851,000 in 1910 and 1,624 valued at $2,905,000 in 1909. The values of imported parts in the three years were $352,000, $985,000 and $773,000 respectively.

Benjamin Briscoe, president of the United States Motor Company, in an interview published last week makes the statement that the automobile output of the country in 1912 will be 210,000 machines, not including motor trucks, as against 140,000 machines scheduled for production in 1911. The greatest year of the industry, Mr. Briscoe states, was 1910, when 186,000 automobiles were made.

The National Machine Tool Builders' Association will hold its annual convention at the Hotel Astor, New York City, October 10, 11 and 12. The National Supply & Machinery Dealers' Association will hold its convention at the same hotel October 10 and 11. The two bodies will hold one joint session for the purpose of bringing them in closer touch and for the discussion of matters of mutual interest, such as a uniform contract arrangement with a non-cancellation clause. Secretary Fernley, of the National Supply Association, will extend an invitation to all legitimate dealers now unaffiliated to attend the convention.

Personal

W. E. Corey returned to New York last week after a six months' absence in Europe. His offices are at 111 Broadway.

F. S. Witherbee, of Witherbee, Sherman & Co., New York, sailed for Europe last week.

George Bartol, general manager of the Otis Steel Company, Ltd., Cleveland, Ohio, has returned from a European trip.

J. Henry Teschmacher, Jr., has established himself at 347 Bay Ridge avenue, Brooklyn, N. Y., as consulting sheet metal worker, to advise with regard to methods of designing and erecting sheet metal construction.

A. H. Teuchter, president of the Cincinnati Bickford Tool Company, Oakley-Cincinnati, Ohio, sailed from Bremen August 22 on the Kaiser Wilhelm II, and will arrive in New York August 29.

T. G. Meachem and T. W. Meachem, of the New Process Rawhide Company, Syracuse, N. Y., have been elected president and vice-president respectively of the Palmer-Moore Company, of the same city, in which they have purchased a controlling interest. The latter company has recently increased its capital stock from $25,000 to $100,000 and will install new machinery and expend its business. It has been perfecting a two-cycle engine for automobiles.

Gano Dunn, who for some years has been first vice-president, chief engineer and a director of the Crocker-Wheeler Company, has resigned from that company in order to accept an important engineering and executive position. He will sail shortly for Europe to attend, as president of the American Institute of Electrical Engineers, the meeting during the Turin Exposition of the International Electrochemical Commission, to be held on September 7, 8 and 9, and also the following meeting of the International Electrical Congress.

A. W. Wheatley has resigned as manager of the Brooks Works of the American Locomotive Company at Dunkirk, N. Y., and will assume the management of the Canadian Locomotive Company's plant at Kingston, Ontario. He will be succeeded at Dunkirk by H. Swoyer, formerly manager of the American Locomotive Company's plant at Richmond, Va.

J. Weillberger, representing the Government of Nicaragua, has been in California investigating the use of oil-burning appliances.

Ferdinand Thun, president of the Textile Machinery Company, Wyomissing, Pa., recently returned from a trip to the Continent. Mr. Thun has crossed the Atlantic 21 times.

F. B. Keiser resigned as vice-president and general manager of the Southern Iron & Steel Company on August 1. A successor has not yet been appointed.

E. T. Conners has been placed in charge of the recently opened Chicago office of the American Rolling Mill Company, at 313 People's Gas Building.

James A. Green, senior partner of Mathew Addy & Co., Cincinnati, Ohio, pig iron merchants, has returned from an extended vacation spent in Canada.

W. W. Hull will continue in charge of the local district of the Republic Iron & Steel Company at Pittsburgh, as manager of sales, while G. L. Claypool will be in charge of the general business of the company in the Pittsburgh district, with the title of assistant general manager of sales. Both will have offices in the Oliver Building.

Robert Garland, president of the Garland Nut & Rivet Company, Pittsburgh, and also actively identified with many other large interests in that city, has been named as one of the nine councilmen in Pittsburgh, and has accepted. P. J. McArdle, president of the Amalgamated Association, has also been named as a councilman and has accepted.

A patent on a machine for seaming can tops was granted August 8 to Joseph Maline, of St. Ouen, Seine, France, and assigned to the E. W. Bliss Company, Brooklyn, N. Y.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Aug. 23, 1911.	Aug. 16, 1911.	July 26, 1911.	Aug. 24, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2 standard, Philadelphia	$15.00	$15.00	$15.00	$16.00
Foundry No. 2, Valley furnace	13.50	13.50	13.50	14.00
Foundry No. 2 Southern, Cincinnati	13.50	13.50	13.25	14.25
Foundry No. 2, Birmingham, Ala.	10.25	10.25	10.00	10.00
Foundry No. 2, at furnace, Chicago*	14.50	14.50	14.50	16.50
Basic, delivered, eastern Pa.	14.75	14.75	14.50	15.00
Basic, Valley furnace	13.00	13.00	13.00	14.00
Bessemer, Pittsburgh	15.90	15.90	15.90	15.90
Gray forge, Pittsburgh	13.90	13.90	13.90	14.15
Lake Superior charcoal, Chicago	16.50	16.50	16.50	18.50
COKE, CONNELLSVILLE,				
Per Net Ton, at Oven:				
Furnace coke, prompt shipment	1.50	1.50	1.50	1.55
Furnace coke, future delivery	*1.60*	1.65	1.65	1.75
Foundry coke, prompt shipment	1.85	1.85	1.85	2.15
Foundry coke, future delivery	2.10	2.10	2.00	2.25
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	21.00	21.00	21.00	24.50
Forging billets, Pittsburgh	26.00	26.00	26.00	29.50
Open hearth billets, Philadelphia	23.40	23.40	23.40	27.50
Wire rods, Pittsburgh	27.00	27.00	27.00	28.00
OLD MATERIALS, Per Gross Ton:				
Iron rails, Chicago	14.00	14.00	14.00	16.00
Iron rails, Philadelphia	17.50	17.50	17.50	18.00
Car wheels, Chicago	**13.00**	12.75	12.50	14.50
Car wheels, Philadelphia	13.00	13.00	13.00	13.75
Heavy steel scrap, Pittsburgh	13.25	13.25	13.25	14.25
Heavy steel scrap, Chicago	**11.00**	10.75	10.50	12.25
Heavy steel scrap, Philadelphia	13.50	13.50	13.50	13.75
FINISHED IRON AND STEEL,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill	1.25	1.25	1.25	1.25
Refined iron bars, Philadelphia	1.27½	1.27½	1.27½	1.40
Common iron bars, Pittsburgh	1.25	1.25	1.25	1.45
Common iron bars, Chicago	1.20	1.20	1.20	1.37½
Steel bars, Pittsburgh	1.20	1.20	1.20	1.40
Steel bars, tidewater, New York	1.36	1.36	1.36	1.56
Tank plates, Pittsburgh	1.35	1.35	1.35	1.40
Tank plates, tidewater, New York	1.51	1.51	1.51	1.56
Beams, Pittsburgh	1.35	1.35	1.35	1.40
Beams, tidewater, New York	1.51	1.51	1.51	1.56
Angles, Pittsburgh	1.35	1.35	1.35	1.40
Angles, tidewater, New York	1.51	1.51	1.51	1.56
Skelp, grooved steel, Pittsburgh	1.20	1.20	1.25	1.45
Skelp, sheared steel, Pittsburgh	1.30	1.30	1.35	1.55
SHEETS, NAILS AND WIRE,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.00	2.00	2.00	2.20
Wire nails, Pittsburgh†	1.70	1.70	1.70	1.70
Cut nails, Pittsburgh†	1.60	1.60	1.60	1.65
Barb wire, galv., Pittsburgh†	2.00	2.00	2.00	2.00
METALS,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.75	12.75	12.75	13.00
Electrolytic copper, New York	*12.50*	12.62½	12.60	12.62½
Spelter, St. Louis	5.95	5.95	5.60	5.20
Spelter, New York	*6.10*	6.15	5.80	5.35
Lead, St. Louis	*4.42½*	4.45	4.45	4.30
Lead, New York	4.50	4.50	4.50	4.40
Tin, New York	**45.00**	44.00	42.00	34.50
Antimony, Hallett, New York	7.75	7.75	8.00	7.87½
Tin plate, 100-lb. box, New York	$3.94	$3.94	$3.94	$3.84

* The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

† These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.; New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought boiler tubes.

Structural Material.—I-beams and channels, 3 to 15 in., inclusive, 1.35c. to 1.40c., net; I-beams over 15 in., 1.45c. to 1.50c., net; H-beams over 18 in., 1.50c. to 1.55c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.35c. to 1.40c., net; angles over 6 in., 1.45c. to 1.50c., net; angles, 3 in. on one or both legs, less than ¼ in. thick, 1.40c., plus full extras as per steel bar card effective September 1, 1909; tees, 3 in. and up, 1.40c., net; zees, 3 in. and up, 1.35c. to 1.40c., net; angles, channels and tees under 3 in., 1.40c., base, plus full extras as per steel bar card of September 1, 1909; deck beams and bulb angles, 1.65c. to 1.70c., net; hand rail tees, 2.45c.; checkered and corrugated plates, 2.45c., net.

Plates.—Tank plates, ¼ in. thick, 6¾ in. up to 100 in. wide, 1.35c. to 1.40c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thinnest edge, extra	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 100 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cuttings to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets. Nos. 3 to 8, U. S. standard gauge, 1.40c.; Nos. 9 and 10, 1.50c.; Nos. 11 and 12, 1.55c.; Nos. 13 and 14, 1.60c.; Nos. 15 and 16, 1.70c. One pass, cold rolled, box annealed sheets, Nos. 10 to 12, 1.65c.; Nos. 13 and 14, 1.70c.; Nos. 15 and 16, 1.75c.; Nos. 17 to 21, 1.80c.; Nos. 22, 23 and 24, 1.85c.; Nos. 25 and 26, 1.90c.; No. 27, 1.95c.; No. 28, 2c.; No. 29, 2.05c.; No. 30, 2.15c. Three pass, cold rolled sheets, box annealed, are as follows: Nos. 15 and 16, 1.85c.; Nos. 17 to 21, 1.90c.; Nos. 22 to 24, 1.95c.; Nos. 25 and 26, 2c.; Nos. 27, 2.05c.; No. 28, 2.10c.; No. 29, 2.15c.; No. 30, 2.25c. Galvanized sheets, Nos. 10 and 11, black sheet gauge, 2c.; Nos. 12, 13 and 14, 2.10c.; Nos. 15, 16 and 17, 2.25c.; Nos. 18 to 22, 2.40c.; Nos. 23 and 24, 2.50c.; Nos. 25 and 26, 2.70c.; No. 27, 2.85c.; No. 28, 3c.; No. 29, 3.10c.; No. 30, 3.30c. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations:

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
29	....	$2.40	23	$2.40	$3.50
28	$1.40	2.55	22	2.60	3.70
27	1.55	2.60	21	2.80	4.05
26	1.65	2.65	20	3.05	4.35
25	1.85	3.05	18	4.05	5.70
24	2.10	3.15	16	4.90	6.50

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 1, 1910:

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
Butt Weld.				
1 to 1½ in.	..	..	49	43
½ in.	75	63	71	59
¾ to 1½ in.	79	69	75	65
2 to 3 in.	80	70	76	66
Lap Weld.				
2 in.	76	66	72	62
2½ to 4 in.	78	67	74	64
4½ to 6 in.	77	67	73	63
7 to 12 in.	75	59	71	55
13 to 15 in.	51½	..	..	..
Butt Weld, extra strong, plain ends, card weight.				
½, ¼, ⅜ in.	69	59	65	55
⅝ in.	74	68	70	64
¾ to 1½ in.	78	72	74	68
2 to 3 in.	79	73	75	69

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Lap Weld, extra strong, plain ends, card weight.				
2 in.	75	69	71	65
2½ to 4 in.	77	71	73	67
4½ to 6 in.	76	70	72	66
7 to 8 in.	69	59	65	55
9 to 12 in.	64	54	60	50
Butt Weld, double extra strong, plain ends, card weight.				
⅛ in.	64	58	60	54
¼ to 1½ in.	67	61	63	57
2 to 3 in.	69	63	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	65	59	61	55
2¼ to 4 in.	67	61	63	57
4½ to 6 in.	66	60	62	56
7 to 8 in.	59	49	62	56

Plugged and Reamed.

1 to 1½, 2 to 3 in. Butt Weld
2, 2½ to 4 in. Lap Weld

} will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld, as specified.

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel boiler tubes to jobbers in carloads are as follows:

	Steel.
1¾ to 2¼ in.	65
2½ in.	67½
2¾ to 3¼ in.	70
3½ to 4½ in.	72½
5 to 6 in.	65
7 to 13 in.	62½

Less than carloads to destination east of the Mississippi River will be sold at delivered discounts for carload lowered by two points for lengths 22 ft. and under; longer lengths f.o.b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Rods and Wire.—Bessemer, open hearth and chain rods, $27. Fence wire, Nos. 0 to 9 per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, $1.50; galvanized, $1.80. Carload lots, to retailers, annealed, $1.55; galvanized, $1.85. Galvanized bar wire, to jobbers, $2; painted, $1.70. Wire nails, to jobbers, $1.70.

The following table gives the price to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 lb.

No.	0 to 9	10	11	12 & 12½	13	14	15	16
Annealed	$1.65	$1.70	$1.75	$1.80	$1.90	$2.00	$2.10	$2.20
Galvanized	1.95	2.00	2.05	2.10	2.20	2.30	2.70	2.80

Market and Stone Wire in Bundles, Discount from Standing List.

Bright and Annealed:	
9 and coarser	80
10 to 18	80 and 10
19 to 26	80 and 10 and 2½
27 to 36	80 and 5
Galvanized:	
9 and coarser	75 and 10
10 to 16	75 and 10
17 to 26	72½ and 10
27 to 36	72½
Coppered or Liquor Finished:	
9 and coarser	75 and 10
10 to 26	75 and 10
27 to 36	70 and 10 and 5
Tinned:	
6 to 18	75 and 10 and 10

Chicago

CHICAGO, ILL., August 22, 1911.

Except for the weaknesses that have developed in steel bar and sheet prices and the lack of momentum in the pig iron situation the strength of the market generally is well sustained. The growth and the broadening of business are beginning to make themselves felt through the less prominent channels of business, and complaints because of the times are less frequent. Rail orders during the week past were light, but encouragement may be had from the placing or orders by the Erie Railroad for about 4000 cars and by the Frisco system for 1200. Manufacturers of railroad supplies report that prospective work for which estimates have been submitted in the past fortnight is exceedingly extensive. Including the steel work for a bridge at St. Louis, Western transactions involving about 10,000 tons of fabricated steel are to be noted for the week. The shops of fabricators are engaged with larger tonnages and some improvement in prices is reported. The tonnage of current business in sheets and bars still seems to be insufficient to go round, and concessions of $1 a ton are freely made. Melters of scrap iron in this immediate territory are not taking such material in with any noticeably increasing freedom, but in the preliminary handling decidedly firmer tendencies are manifest.

Pig Iron.—Very little iron was purchased during the past week. The sales reported comprised several lots of a few hundred tons each for shipment during the remainder of the year, but melters generally are not interested in Southern iron at $10.50, Birmingham, for anything but first quarter and first half delivery. It is generally conceded that the demand for last half iron was well filled with iron bought on the basis of $10 and that as long as the situation remains as it is with local irons Southern furnaces can scarcely hope for much business at the advanced price. Some Southern furnaces not in the Birmingham district will sell at $10.25 and the statement has been made that $10 was done by such a furnace in the past week. Local makers continue to take business at $14.50 at furnace. Inquiry for malleable, though still active, is but poorly supported by actual purchases, and one large inquiry has been withdrawn. Deliveries of iron on recently placed orders are being accepted on schedule apparently, but a very large tonnage is held up in this district on old contracts, particularly for malleable. A new freight rate is now in effect on Lake Superior charcoal at an advance of 25c. a ton, making the tariff $1.75 into Chicago. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices:

Lake Superior charcoal	$16.50 to $17.00
Northern coke foundry, No. 1	15.00 to 15.50
Northern coke foundry, No. 2	14.50 to 15.00
Northern coke foundry, No. 3	14.25 to 14.50
Northern Scotch, No. 1	16.00
Southern coke, No. 1 foundry and No. 1 soft	15.10
Southern coke, No. 2 foundry and No. 2 soft	14.60
Southern coke, No. 3	14.35
Southern coke No. 4	14.10
Southern gray forge	13.85
Southern mottled	13.85
Malleable Bessemer	14.50 to 15.00
Standard Bessemer	17.40
Basic	15.50
Jackson Co. and Kentucky Silvery, 6 per cent.	17.90
Jackson Co. and Kentucky Silvery, 8 per cent.	18.90
Jackson Co. and Kentucky Silvery, 10 per cent.	19.90

Rails and Track Supplies.—The rail business of the past week as reported by the leading interest was confined to small lots which did not exceed in the aggregate 10,000 tons. Quite a number of similar orders are in prospect. The major portion of the rails ordered are Bessemer and the South Chicago mill is comfortably provided for, but an increase in the open-hearth rail tonnage on the books would not be unwelcome. We quote standard railroad spikes at 1.65c. to 1.75c., base; track bolts with square nuts, 2.10c. to 2.20c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c. to 1.60c., Chicago.

Structural Material.—With the taking of a number of small orders for fabricated steel, the status of local structural shops with reference to the volume of profitable business on the books has improved. For this class of work and for most of the bridge work better prices are being obtained. It is understood that the plants of the larger interests are now handling more work than for a considerable period. The American Bridge Company is reported to have been the low bidder for the approach to a Mississippi River bridge at St. Louis. The work reported as placed during the week amounted to about 3,000 tons, of which the largest order was for 1,100 tons for the Washington Street bridge awarded to the Strobel Steel Construction Company. The Wisconsin Bridge Company will build two turntables weighing 136 tons for the Chicago, Milwaukee & St. Paul Railroad. The Minneapolis Steel & Machinery Company will furnish 588 tons of steel for the Brunet Falls Mfg. Company, Cornell, Wis. The Chicago, Burlington & Quincy Railroad let 199 tons to the Klemp-Simpson Company, Muncie, Ind. For the Lincoln Park (Chicago) Zoo 176 tons went to the Vierling Steel Works. A lodge building at San Francisco requiring 444 tons was awarded to the Central Iron Works of that city and an addition to a brewery at Portland, Ore., calling for 191 tons, was placed. We quote plain material, Chicago delivery, mill shipment, at 1.53c. and from store, 1.75c.

Plates.—Demands on jobbers' stocks and mill orders do not indicate any very great activity on the part of local tank and boiler shops. Mill tonnage now being rolled is largely for railroad, bridge and car work. Labor troubles have made great inroads on the normal volume of boiler and tank business transacted here by the plumbing and steam fitting contractors, and only recently has any evidence of a return of normal conditions been sighted. We continue to quote for Chicago delivery, from mill, 1.53c., and from store, 1.75c.

Sheets.—While shading of sheet prices is the rule, the extent of these concessions varies greatly, being

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for the most part in keeping with the amount of freight advantage the various mills enjoy. Prices as much as $2 a ton below nominal quotations are reported, but no evidence appears here confirming concessions of more than $1.50 per ton. Current business holds up sufficiently to preserve about the same percentage of mill operations as has prevailed for some weeks, but little improvement is noted in the accumulation of specifications for future rolling. We continue to quote Chicago prices as follows: Carload lots, from mill: No. 28 black sheets, 2.18c.; No. 28 galvanized, 3.18c.; No. 10 blue annealed, 1.68c. Prices from store, Chicago, are: No. 10, 1.95c. to 2.05c.; No. 12, 2c. to 2.10c.; No. 28 black, 2.45c. to 2.55c.; No. 28 galvanized, 3.45c.

Bars.—Local bar iron mills are reported as operating from 50 to 60 per cent. of their average normal capacity. The weakness in steel bar quotations has not tended to enhance the firmer attitude which the bar iron mills have been assuming. Concessions of $1 a ton for steel bars are quite general, notwithstanding which some business is reported placed at full prices. Current buying is only moderate. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.43c.; bar iron, 1.20c. to 1.25c.; hard steel bars, rolled from old rails, 1.20c. From store, soft steel bars, 1.70c. to 1.80c., Chicago.

Wire Products.—With the passing of the midsummer season the extreme quiet in the wire trade is yielding to the awakening of fall demand. Increases are noted in wire nail business and in specifications for wire entering into manufactured products. Barb wire is not in demand. The worst of the price shading seems to be over, but the fact that crop reports have fallen short of earlier expectations has not been without its discouraging effects. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.68c.; wire nails, 1.88c.; painted barb wire, 1.88c.; galvanized, 2.18c.; polished staples, 1.88c.; galvanized, 2.18c., all Chicago.

Cast Iron Pipe.—Bids are to be received this week at St. Louis covering about 1,000 tons of pipe. The lettings of the past week did not include any of important tonnage but the miscellaneous business was well maintained. The leading interest will furnish 250 tons for Ironton, Ohio. Prices continue firm and we quote per net ton, Chicago, as follows: Water pipe, 4 in., $25.50; 6 to 12 in., $24.50; 16 in. and up, $24, with $1 extra for gas pipe.

Old Material.—Although the consumptive demand seems not to be any more active, a stronger tone prevails in the scrap market and prices indicate an upward tendency. A sale of 1800 tons of rerolling rails by the Great Northern Railroad is said to have brought about $13, Chicago, and 1000 tons of No. 1 wrought was placed by another railroad at $11.60, delivered. Dealers are paying higher prices for almost all steel scrap items. Cast borings are greatly in demand. In territory West and Southwest a stronger situation prevails than in this immediate market. The Northern Pacific is offering about 1200 tons of old material. We have revised our prices and quote as below for delivery to buyer's works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails	$14.00 to $14.50
Old steel rails, rerolling	12.75 to 13.25
Old steel rails, less than 3 ft.	11.50 to 12.00
Relaying rails, standard sections, subject to inspection	24.00
Old car wheels	13.00 to 13.50
Heavy melting steel scrap	11.00 to 11.50
Frogs, switches and guards, cut apart	10.75 to 11.25
Shoveling steel	10.50 to 11.00
Steel axle turnings	8.50 to 9.00

The following quotations are per net ton:

Iron angles and splice bars	$12.50 to $13.00
Iron arch bars and transoms	13.75 to 14.25
Steel angle bars	10.25 to 10.75
Iron car axles	18.00 to 18.50
Steel car axles	16.00 to 16.50
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	10.00 to 10.50
Steel knuckles and couplers	10.00 to 10.50
Locomotive tires, smooth	15.00 to 15.50
Machine shop turnings	6.25 to 6.75
Cast and mixed borings	6.00 to 6.50
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.75 to 7.25
No. 1 boilers, cut to sheets and rings	7.50 to 8.00
Boiler punchings	12.00 to 12.50
No. 1 cast scrap	10.25 to 10.75
Stove plate and light cast scrap	9.00 to 9.50
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.25 to 9.75
Pipes and flues	8.00 to 8.50

Philadelphia

PHILADELPHIA, PA., August 22, 1911.

Transactions in iron and steel have been on a somewhat smaller scale. The strength of the pig iron market has, however, been fully maintained and sellers continue to treat inquiries for extended shipment rather indifferently. In finished products an undertone of weakness is apparently developing, although there is no quotable change in current prices. Consumers have been endeavoring to break the market, but quantities inquired for have, as a rule, not been attractive enough to induce makers to shade, even if they were willing to do so. The market for billets drags. Little business is offered in either iron or steel bars, but prices are comparatively firm. The old material market is inclined to be weak and in some grades small lot business has been at lower figures.

Iron Ore.—There has been some little odd lot movement in local ores, and one interest has extended its contract by one cargo, some 10,000 to 12,000 tons, of Newfoundland ore. Over-sea ore has been quiet, the scarcity of bottoms and the high freight rates, 10s. 3d. from western Mediterranean and 11s. from eastern Mediterranean points, being of a rather prohibitive nature at the present range of prices for foreign ores at tidewater. No arrivals of foreign ore were reported in the past week.

Pig Iron.—Recent transactions have been largely confined to foundry grades, principally small lots for prompt and early shipment. While there has been considerable inquiry, the position of sellers in this district is gradually becoming stronger and less attention is being given to inquiries covering extended delivery. Some producers have advanced quotations for foundry grades 25 cents a ton to other than present customers, whose regular requirements they are still willing to take care of at current quotations. A number of the eastern Pennsylvania furnaces have their output, at the present rate of operation, sold for the third and a considerable portion of the fourth quarter, and are therefore not particularly anxious for business at present quotations and have not determined on a price for delivery beyond the year end, for which there is considerable inquiry. Deliveries on contracts are being taken freely and, in instances, consumers are pressing for shipments. For prompt and near future shipment No. 2 X iron of standard analysis is available at $15 to $15.25, delivered in this vicinity. A purchase of a lot of 1000 tons of low grade iron by a soil pipe maker is reported, while one of the Delaware River cast iron pipe makers is out with an inquiry for 1000 tons of low grade for prompt shipment. Pipe makers have been taking on some further small lots of off iron, but no large purchases are reported. The movement in Virginia foundry grades has been less active, and it is stated that the price of $12.25 at furnace for Virginia foundry iron is now available, in instances, for deliveries extending over the remainder of the year. The majority of sellers, however, still maintain the $12.25 basis for prompt and name $12.50 for more extended delivery, although in a few cases the latter quotation is still the minimum. Forge iron has not been in active demand; several small lots of rolling mill forge have been sold at $14.25 to $14.50, delivered in this vicinity, but there is practically no inquiry for large lots. No sales of basic beyond those noted last week are reported; consumers are awaiting developments. The Eastern mill recently in the market for 25,000 tons of basic for the first quarter of 1912 has practically withdrawn the inquiry. One Eastern mill is reported to be in the market for a moderate lot of Bessemer iron. Small sales of low phosphorus iron are reported at prices ranging from $20 to $20.50, delivered, for standard analysis iron. The following range of quotations is named for standard brands delivered in buyers' yards in this vicinity, shipment ranging from prompt to the remainder of the year:

Eastern Pennsylvania No. 2 X foundry	$15.00 to $15.25
Eastern Pennsylvania No. 2 plain	14.75 to 15.00
Virginia foundry	15.00 to 15.50
Gray forge	14.25 to 14.50
Basic	14.75 to 15.00
Standard low phosphorus	20.00 to 20.50

Ferroalloys.—Notwithstanding the apparent firmness with which sellers are maintaining the $37, Baltimore, quotations for 80 per cent. ferromanganese, rumors will not down that as low as $36.50 has been quoted and sales made on that basis. Lots ranging from 150 to 500 tons for extended delivery are said to have been sold, while small sales at $37 are also

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reported. A better demand for ferrosilicon is noted; several hundred tons of 50 per cent. have been sold at $57, delivered in this vicinity, while inquiries for furnace silicon in lots of 100 to 300 tons are reported. The latter grade is quoted at $26.30 for 10 per cent., $27.30 for 11 per cent. and $28.30 for 12 per cent., within Bessemer limits as to phosphorus and sulphur content, delivered in this district.

Billets.—Business coming to the mills continues light. Current orders for both rolling and forging billets are confined to small lots for early delivery, and consumers show less interest in contracts for extended shipment. Mills are almost entirely dependent on current orders, but manage to continue operations on about an even basis. Quotations are firmly maintained at $23.40 for open-hearth rolling billets, and $28.40 for ordinary forging billets, delivered in buyers' yards in this vicinity.

Plates.—The demand continues of a moderate character, and, while individual orders are small as a rule and largely for early delivery, the aggregate, together with current specifications, is sufficient to enable mills to operate at an unchanged basis. While the trade is encouraged with the prospects, comparative quietness at the present time is generally reported. Producers in this district maintain the recent quotations, although rumors that lower prices might be had for desirable business are heard, but the market has not been thoroughly tested, and current business easily commands 1.50c., delivered here.

Structural Material.—Immediate business continues along narrow lines. There is considerable inquiry for small lots of plain and fabricated material for bridge and building work, but orders develop more slowly. Nothing definite has transpired regarding the new Stock Exchange Building, while the proposals for the new Municipal Convention Hall will not go in until the end of the month. Plans are out for the new Post Office Building in Washington, D. C., for which from 9000 to 10,000 tons of structural material will be required. Inquiries for small railroad bridge work continue to come out. Prices of fabricated work are said to be less firm, as competition has again become sharper. Plain shapes are maintained at 1.50c., delivered in this district, but as most of the business is small the market has not been very seriously tested.

Sheets.—Little change in the situation is reported by Eastern mills, which continue dependent on day to day orders, which, as a rule, are confined to small lots for early delivery. As Eastern mills make prompt shipments, they have so far been unaffected by weakness in prices of Western sheets. There has been practically no inquiry from consumers for contracts covering extended deliveries.

Bars.—Business offered, either in steel or refined iron bars, continues small. Steel bars are more generally quoted at the 1.40c., delivered, basis, although it is not impossible, it is said, to slightly shade that figure. Current business in iron bars has been confined to small lots for which 1.20c., Eastern mill, is the minimum, on desirable specifications, and 1.22½c., mill, has been done for less desirable business. For delivery in this territory refined iron bars are quoted at 1.27½c. to 1.32½c.

Coke.—While the demand is not particularly active, sellers show more firmness in maintaining quotations. Several moderate contracts for foundry coke for deliveries ranging over the remainder of the year to a full twelve months are reported at from $2.20 to $2.35 at oven, while prompt foundry coke can be had down to $2. Furnace coke has been quiet, with prompt quoted at $1.50 at oven, and forward at $1.60 to $1.70. The major portion of the business done has been in prompt coke. The following range of quotations is named, per net ton, for deliveries in this vicinity:

Connellsville furnace coke	$3.75 to $3.95
Foundry coke	4.25 to 4.60
Mountain furnace coke	3.35 to 3.55
Foundry coke	3.85 to 4.20

Old Material.—The demand, which has been inactive for some weeks, has become easier. Consumers have in several instances, withdrawn from the market, and sales by some weak holders of material have been made at lower figures. There has been little movement in steel and the higher range of prices has practically disappeared. Buyers' ideas of prices for heavy melting steel range from $13 for No. 1 yard to $13.50 for No. 1 choice railroad with sellers holding at about 25 cents above those figures. Cast borings and wrought turnings have been sold in moderate lots at 25 cents under last week's quotations. Railroad wrought is 50 cents under recent prices. Both buyers and sellers are holding off awaiting developments, as the present stage of the market is by no means clear. There is almost an entire absence of speculative buying or selling. The following range of prices about represents the market for early deliveries in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to $1.35 per gross ton for shipment ranging from prompt to the remainder of the year:

No. 1 railroad heavy melting steel scrap	$13.50 to $13.75
No. 1 yard heavy melting steel scrap	13.00 to 13.25
Old steel rails, rerolling (nominal)	14.00 to 14.50
Low phosphorus heavy melting steel scrap	16.75 to 17.25
Old steel axles (nominal)	19.50 to 20.00
Old iron axles	24.50 to 25.00
Old iron rails	17.50 to 18.00
Old car wheels (nominal)	13.00 to 13.50
No. 1 railroad wrought	15.50 to 16.00
Wrought iron pipe	12.75 to 13.25
No. 1 forge fire	11.25 to 11.75
No. 2 light iron (nominal)	6.75 to 7.25
Wrought turnings	9.25 to 9.75
Cast borings	8.75 to 9.25
Machinery cast	13.25 to 13.75
Railroad malleable (nominal)	11.50 to 12.00
Grate bars, railroad	10.00 to 10.50
Stove plate	10.50 to 11.00

Cleveland

CLEVELAND, OHIO, August 22, 1911.

Iron Ore.—Ore firms that early in the season looked for a moderate buying movement in the late summer or early fall now have little confidence that these expectations will be realized. It is quite generally admitted that the demand for steel and pig iron has not improved sufficiently to stimulate much if any activity in ore. The little spurt of small lot buying noted last week has subsided. Additional sales aggregating only about 50,000 tons are reported. The Steel Corporation is planning an early closing of its ore shipping season and most of the merchant ore firms will be through with their shipments earlier than usual. Business in the Lake trade is dull and some of the vesselmen are talking of tying up their boats for 15 days. We quote prices as follows: Old range Bessemer, $4.50; Mesaba Bessemer, $4.25; old range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig Iron.—Sales of Southern iron in this territory have improved, advancing prices apparently having caused consumers to cover for their last quarter requirements. A local stove manufacturer has bought 750 tons and a local furnace builder has contracted for 500 tons of Southern iron, both for the last half delivery. We also note the sale of 1000 tons of Southern to a Barberton, Ohio, plant for the last quarter. The Standard Sanitary Mfg. Company, in addition to purchases of Northern iron for its plants near Pittsburgh, is reported to have bought 1500 tons of No. 2 Southern and 1000 tons of Southern gray forge for its Louisville plant. The market is firm at $10.50, Birmingham, for No. 2 for the last quarter, but the same grade can still be bought at $10.25, for delivery through the remainder of the year. There is little activity in Northern foundry iron. A number of sales are reported, but they are nearly all in quite small lots. Many consumers have not yet covered for their last quarter requirements and are expected to hold off for another month. One local consumer is in the market for 1000 tons of Northern. The consumption shows little change, foundries generally running at about 60 per cent. of their full capacity. Northern iron is firm at $13.50, Valley furnace, for No. 2, although in some cases slight concessions are reported to absorb freight rates higher than from Valley shipping points. For Cleveland delivery we quote as follows, delivered, for prompt shipment and for the last half:

Bessemer	$15.90
Basic	$13.75 to 14.00
Northern foundry No. 2	13.75 to 14.00
Gray forge	13.25
Southern foundry No. 2	14.60 to 14.85
Jackson Co. silvery, 8 per cent. silicon	17.85

Coke.—The market is very dull. The only demand is for foundry grades in small lots for spot shipment. Most consumers, however, are under contract. We quote standard Connellsville furnace coke at $1.50 to $1.60 per net ton at oven for prompt shipment and $1.60 to $1.70 for the remainder of the year. Connellsville 72-hr. foundry coke is held at $1.85 to $2.15 for prompt shipment and $2.10 to $2.40 for contract.

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Finished Iron and Steel.—The demand in finished lines is fairly good, orders coming out in about the same volume as they have during the past two or three weeks. There is an absence of a demand for large tonnages. Orders and specifications from manufacturers are quite numerous but they are for small lots on which quick shipment is desired. Some of the mills are no longer shading prices on steel bars but good-sized lots for prompt delivery can still be bought at 1.20c., Pittsburgh. The demand for small lots of structural material is quite active. The contract for a new steel span for the Central viaduct, Cleveland, requiring 600 tons, has been awarded to the King Bridge Company, and the contract for six track stringers, taking 120 tons, to the Republic Structural Iron Works Company. The Donovan Wire & Iron Works Company, Toledo, has taken 400 tons for an addition to the plant of the Stroh Brewing Company in that city. Bethlehem sections will be used. New bids for the city hall, Cleveland, requiring 4000 tons, will be received September 7. Bids are being received for steel for the Leader Building, Cleveland, requiring 4000 to 5000 tons, the amount depending on whether it is finally decided to make it a 14 or a 16-story structure. The erection of this building will not be started until next year. The Pennsylvania Railroad crossing elimination work in Cleveland will require about 2000 tons of structural steel for bridges. The demand for sheets is not active, specifications on contracts not being liberal. The ruling price for both black and galvanized sheets is $1 a ton below published quotations. The demand for iron bars continues light. The Empire rolling mill has shut down for a few days. We quote iron bars at 1.25c. to 1.30c., Cleveland. Jobbers report an improvement in warehouse business, which at present is fairly satisfactory.

Old Material.—Following a good demand a few days ago, the market has settled down and prices are easier, quotations on several grades being reduced 25c. to 50c. a ton. One local steel plant has completed the purchase of a round tonnage, and sales aggregating 4000 tons are reported to a Canton steel plant. Local steel and iron mills appear now well supplied with scrap and dealers expect no further orders for the present from mills outside of this district. The prospect of a dull period for the next few weeks has resulted in the softening of prices. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling	$13.00 to $13.50
Old iron rails	15.00 to 15.50
Steel car axles	17.50 to 18.00
Heavy melting steel	12.00 to 12.25
Old car wheels	12.00 to 12.25
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	10.75 to 11.25
Railroad malleable	12.25 to 12.75
Light bundled sheet scrap	10.00 to 10.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$20.50 to $21.00
Cast borings	6.50 to 6.75
Iron and steel turnings and drillings	7.00 to 7.50
Steel axle turnings	8.25 to 8.75
No. 1 busheling	10.00 to 10.50
No. 1 railroad wrought	11.75 to 12.25
No. 1 cast	11.25 to 11.75
Stove plate	9.50 to 10.00
Bundled tin scrap	11.00 to 11.50

Birmingham

BIRMINGHAM, ALA., August 21, 1911.

Pig Iron.—A lot of 1000 tons of No. 2 foundry, for shipment during the remainder of this year and extending into the first quarter of 1912, is the largest inquiry now pending. Quotations have just been submitted on 350 tons of No. 2 soft for last quarter delivery, and several carloads and lots of 100 to 250 tons each for comparatively early shipment are in demand. The aggregate sold the past week was considerably less than that of the week previous. In last reports from the selling agents mention is made of the sale of 500 tons of gray forge for shipment during the remainder of the year at $9.50, Birmingham. The sale of 400 tons of No. 3 foundry for last quarter shipment is reported at $10.50, Birmingham, and 300 tons of No. 2 soft for shipment commencing immediately and covering the next 60 days brought the same price. A lot of 500 tons of No. 3 foundry for spot shipment was sold at $10, Birmingham. The aggregate of carload orders for prompt shipment, and which was entered at $10.50 for No. 2 soft, is estimated at from 750 to 1000 tons. There has been no change in quotations by any of the furnace companies since last report. The majority continue to adhere to a basis of $11, Birmingham, for deliveries during the last quarter without committing themselves for deliveries further advanced. It is believed that a basis of $10.50 correctly represents the market for any delivery within the remainder of the year, and that offers of $11 for first quarter deliveries would not be refused. The buying interests are, apparently, disposed to await further developments before contracting the first quarter requirements. From the continued heavy rate of shipment from furnace yards against contracts, and the fairly strong demand for prompt deliveries, it appears that all lines of foundry trade have improved; however, but few cases are reported where higher prices for the finished product are being actually received. It is understood that an additional furnace will soon be blown in on foundry iron, but no authoritative statement has yet been made in that connection. The Alice Furnace of the Tennesse Coal, Iron & Railroad Company has just been blown in on basic iron, making a total of five stacks now in operation on that grade. The output of foundry iron is still represented by thirteen active stacks. We quote the market for deliveries during the remainder of the year at the schedule below, per gross ton, f.o.b. cars, Birmingham furnaces:

No. 1 soft and No. 1 foundry	$11.00
No. 2 soft and No. 2 foundry	10.50
No. 3 foundry	10.00
No. 4 foundry	9.75
Gray forge	9.50
Mottled	9.25
Off basic	$10.00 to 10.50
Standard basic	10.25 to 10.75
Charcoal car-wheel iron	22.50

Cast Iron Pipe.—Producers report the outlook for new business encouraging, but the aggregate recently placed is comparatively small. Inquiries now pending consists of some 500 tons for Cleveland, Ohio; 150 tons for San Antonio, Texas, and 500 to 750 tons for requirement in southern California. It is understood that the Dimmick plant at North Birmingham will be put in operation within the next 30 days. We quote the market firm as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12 in., $21, with $1 per ton extra for gas pipe.

Old Material.—This market continues to improve slightly and better prices have been received during the past week for all cast grades than for many weeks past. The business transacted consisted largely of carload lots, but dealers are more encouraged and are adding to their stocks at a fair rate. Prices are unchanged though stronger, and we quote the market as below, per gross ton, f.o.b. cars here:

Old iron axles (light)	$13.50 to $14.00
Old steel axles (light)	12.50 to 13.50
Old iron rails	12.50 to 13.00
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	9.50 to 10.00
No. 1 country wrought	7.50 to 8.00
No. 2 country wrought	7.00 to 7.50
No. 1 machinery	9.50 to 10.50
No. 1 steel	8.50 to 9.00
Tram car wheels	8.00 to 8.50
Standard car wheels	9.50 to 10.50
Light cast and stove plate	7.00 to 7.50

St. Louis

ST. LOUIS, MO., August 21, 1911.

Decided firmness has characterized all branches of the iron market the past week and quotations are more stiffly held than for months. The inquiries, especially for coke, are more active, while in finished products there has been a tonnage movement that is very satisfactory. The same has been true of the pig iron movement and the tenor of the whole situation is generally better, except that in old material, though prices are still firmly held and steel continues active, there is a tendency toward quietness for the moment.

Pig Iron.—The determination of pig iron sellers to hold the market up seems to have born fruit, for at the present time there is nothing lower than $10, Birmingham, for No. 2 for immediate delivery to be found here, while last quarter delivery is $10.50. The firmness of the sellers has for the moment put buyers out of the market, but they are expected to come in when they realize that the price has been marked up to stay. No. 2 Northern is quotable at $13 to $13.50, Ironton, but practically nothing is doing. The movement in pig iron for the past week has aggregated more than for a long time, but it has been made up of carload and even less than carload lots, indicating that the buyers are taking on a hand-to-mouth policy pending development of permanency of prices.

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Coke.—An inquiry for 5000 tons of best selected 72-hour Connellsville coke came into the market during the week, but the order has not been placed and there is considerable competition for it, so that it is likely to be placed at a very low price as it is largely wanted for quick delivery. Forward deliveries are well held, however.

Finished Iron and Steel.—The situation continues very satisfactory as regards the aggregate business, the tonnage footing up a good figure for the week as a whole, but it was all taken in small individual lots on both new orders and on contract specifications. The insistence on immediate deliveries continues, especially on structural material, though no large orders have been placed. Specifications on contracts, like new business, have both been of the hand-to-mouth order, but inquiries are reported as coming in which indicate a much more active situation by the first of the coming month. In standard section steel rails the Southwest took 1750 tons during the week in a group of small orders. This was the sum total in that line for the period. In plates, bars, etc., the business for the present is almost altogether on specifications on contracts and the tonnage taken is only fair. Track fastenings are in normal demand and firm in price. The coal companies have taken about 200 tons in light rails for the week, but the lumber companies have done nothing in this line. The fabricators are coming more and more into the market in preparation for stock for winter work. In general the situation is looked upon as much better in tone.

Old Material.—The situation is a little unsettled just now, though this has had no unfavorable effect on quotations as yet. Steel is as strong as ever, and the present quietness is generally regarded as a result of the cleaning up of the railroad material market, all the recent lists having been sold up. The new lists of the end of the month are expected to show renewed activity and possibly higher prices. Dealers have not so much stock in their yards now as they have had. The inquiry for relaying rails has fallen off some, but not enough to lower prices any. Dealers' prices, per gross ton, f.o.b. St. Louis, are as follows:

Old iron rails	$13.00 to $13.50
Old steel rails, rerolling	13.00 to 13.50
Old steel rails, less than three feet	11.50 to 12.00
Relaying rails, standard section, subject to inspection	23.00 to 23.50
Old car wheels	13.00 to 13.50
Heavy melting steel scrap	11.50 to 12.00
Frogs, switches and guards cut apart	11.50 to 12.00

The following prices are per net ton:

Iron fish plates	$11.00 to $11.50
Iron car axles	19.50 to 20.00
Steel car axles	18.50 to 19.00
No. 1 railroad wrought	11.25 to 11.75
No. 2 railroad wrought	10.25 to 10.75
Railway springs	9.75 to 10.25
Locomotive tires, smooth	14.50 to 15.00
No. 1 dealers' forge	8.50 to 9.00
Mixed borings	6.50 to 7.00
No. 1 busheling	9.50 to 10.00
No. 1 boilers, cut to sheets and rings	8.00 to 8.50
No. 1 cast scrap	10.00 to 10.50
Stove plate and light cast scrap	8.00 to 8.50
Railroad malleable	8.50 to 9.00
Agricultural malleable	7.50 to 8.00
Pipes and flues	8.50 to 9.00
Railroad sheet and tank scrap	8.50 to 9.00
Railroad grate bars	8.00 to 8.50
Machine shop turnings	7.50 to 8.00

The German Iron Market

An Improvement in Business

BERLIN, August 11, 1911.—The market reports this week are almost unanimous in noting a gradual improvement of business. It is evident that no further price reductions have been made, and even some small advances are mentioned. On the Düsseldorf Exchange several days ago an advance of about 1 mark for most of the Siegerland qualities of pig iron was quoted, which was explained by the completion of the general syndicate. At the same time basic steel bars were quoted at 100 to 105 marks, as against 99 to 105 marks previously. The trade report given out by the exchange contained this summary of the iron situation: "Bars again firmer and calls for delivery of goods in all lines satisfactory." The bar price just noted is said in general trade reports to correspond pretty fairly to actual conditions; but reports differ as to the amount of orders in hand for bars. Some say that the amount of work booked will keep the mills employed for months ahead; others that the mills must have in some cases as much as six weeks' time for filling new orders. At any rate, it appears certain that manufacturers are less urgent in their offerings and are more inclined to keep up prices than they were several weeks ago. Some of the market reviews further note that the mills are looking for an active autumn demand for bars and think that prices can again be lifted slightly. In the Siegerland district, too, bar mills are reported as having more work to do and at somewhat better prices.

No new fact has developed in the negotiations between the Pig Iron Syndicate and the Luxemburg-Lorraine group of independent furnaces. The two parties are still meeting in conference. According to the latest reports the independents have at length shown a more decided disposition to join, and a certain optimism in that direction is noted in the trade and on the stock markets. The pig-iron trade remains quiet, pending the further developments in these negotiations. Some selling of supplementary amounts for 1911 delivery is going on, and some of the reports assert that such sales are at 2 to 3 marks higher than a month ago. The Siegerland furnaces appear to have accumulated moderate stocks during the past few months, but they are now able to dispose of these owing to the increased buying movement caused by the completion of the syndicate.

Pig Iron Output to Increase

The production of pig iron in July reached 1,290,106 tons, comparing with 1,262,997 tons in June and 1,228,316 tons in July, 1910. The rate of daily production, however, has been gradually declining since April, when high-water mark was touched at 42,847 tons per day. The July rate was 1231 tons a day less than that figure. But indications are not lacking that a further increase of production will occur within a reasonable time. Besides the new furnaces recently reported in this correspondence as building or projected, it is now announced that the Differdingen branch of the big Deutsch-Luxemburg Company has just commenced the erection of its ninth furnace, and it is further reported that it is trying to buy land on which to build three more. In the Siegerland region some idle furnaces are to be blown in. Higher production figures may therefore be expected soon. At present the furnaces are operating at 88 per cent. of their normal capacity. The waste and scrap iron market has been improved by the organization of the Pig Iron Syndicate. Although pretty heavy quantities of material are coming upon the market, these are absorbed at steady or rising prices.

Not much business is doing in ores, the furnaces having previously arranged for their requirements to the end of the year, and sales for 1912 delivery not yet having been opened. There is also little new business in foreign ores, but the arrivals from abroad in July were uncommonly heavy. The preliminary trade statistics show imports of 1,312,300 tons, which compares with only 348,600 tons last year.

The business of the Steel Works Union in fully syndicated products continues good, and calls for delivery on order are coming in briskly. The July shipments of steel material for further manufacture, structural forms, rails and ties amounted to 456,000 tons, which was about 8000 tons more than last year, but about 43,000 less than in June, 1911, when many works were hurrying up their deliveries before the close of their business year. Most of the big Union companies are turning out blooms and billets beyond their allotments. They have a heavy demand for their own consumption, and it is mentioned that some of them are even buying extra amounts in the market. It is not believed that the Union will grant the price reduction on steel for the December quarter applied for by the rod and band iron makers. Structural steel work remains brisk and will apparently continue so pretty well into the autumn. The heavy plate mills report that there is no letup in their big run of orders. Manufacturers of light plates have also been able to increase their bookings recently, but there has been no advance in prices. The unsatisfactory conditions hitherto reported as prevailing in the band iron, rod and tubing trades have apparently undergone no change for the better.

Large Exports of Steel

Germany's exports of steel products in July reached unusual proportions. The following are the figures, with the comparative amounts for last year, in metric tons:

	July, 1911.	July, 1910.
Blooms, billets, etc.	80,138	29,691
Beams	67,066	37,111
Steel rails	58,870	45,441
Ties	9,611	7,138
Totals	215,685	119,381

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It is reported that Thyssen & Co., owners of the great establishment, Gewerkschaft Deutscher Kaiser, are negotiating for the purchase of the Lothringer Eisenwerke at Ars on the Moselle River, which operates with a capital of nearly 5,000,000 marks.

Iron, coal and other mining shares listed on the Berlin stock market registered an average advance of nearly 5 points in July. This fact expresses considerable optimism on the part of speculators, in view of the adverse political situation of the month in connection with Germany's Morocco policy. The market yesterday received further encouragement by the announcement of a dividend of 20 per cent. by the Hoesch Works, of Dortmund, one of the strongest of the Westphalian establishments. Its gross profits reached 9,101,000 marks, as against 8,011,000 marks last year.

This week's news from the Belgian market is again good. The steel mills agreed upon an advance of 2.50 francs for plates of basic steel for home delivery, while light beams were marked up 5 francs. The export price for heavy basic steel plates was advanced 1 franc to 96 francs, f.o.b. Antwerp.

Buffalo

BUFFALO, N. Y., August 22, 1911.

Pig Iron.—Extreme dullness has characterized the market in this district for the past week, the sales reported having aggregated only about 8000 tons, mostly foundry grades. No transactions of importance are noted. Large shipments are being made on contracts, however, and it is understood that furnaces in this territory have not been piling any iron the past month or six weeks. An interesting feature is that heavy shipments are being made by lake to Chicago and vicinity from this producing district. Prices remain substantially unchanged since last report, although there is no doubt that in certain instances furnaces can be found that would accept a shade under the prices shown below where very desirable business is offered. We quote as follows, f.o.b. Buffalo, for prompt and last half delivery:

No. 1 X foundry	$13.75 to $14.00
No. 2 X foundry	13.50 to 13.75
No. 2 plain	13.25 to 13.50
No. 3 foundry	13.25 to 13.50
Gray forge	13.25 to 13.50
Malleable	13.75 to 14.25
Basic	13.75 to 14.25
Charcoal	16.50 to 17.50

Finished Iron and Steel.—Considerable activity is noted in small lot buying for immediate requirements, applying to all classes of finished products, a feature of the situation being that consumers commence to press for delivery as soon as an order is placed, indicating the close character of the buying and that the market is bare of stocks. The feeling among sellers is that with this condition existing there must be an increase in buying over the remainder of the year. Two good-sized contracts for bars are reported and also 150 tons of reinforcing bars for the Republic Metalware Company's new warehouse, for which the Turner Construction Company has the general contract. As far as can be ascertained none of the mill agencies in this territory is quoting 1.20c., Pittsburgh, for steel bars, 1.25c. being apparently the market price here. Canadian business has been exceedingly good for bars, plates and structural material and specifications on contracts are coming in from Ontario users in large volume. Exceptional activity is noted in fabricated structural material. All fabricating shops in Buffalo are filled with work and prices for fabricated material are somewhat better than for two or three months. The Buffalo Structural Steel Company has received contract for fabrication and erection of the steel for the new New York Central union station at Rochester, about 1500 tons. The larger portion of the steel will be furnished by the Lackawanna Steel Company. The Buffalo Structural Steel Company will also fabricate the 200 tons of steel for the Home Economics Building for Cornell University, Ithaca, for which the Durolithic Company, Buffalo, has the general contract. The American Bridge Company will furnish the fabricated steel, 150 tons, for the Poultry and Husbandry Building at Ithaca, for which the Eastern Concrete Steel Company holds the general contract. Steel for the new postoffice building, Schenectady, for which the Durolithic Company, Buffalo, has the general contract, 100 tons, is to be sublet this week. Chas. F. Ernst's Sons Iron Works, Buffalo, has received contract for fabrication and erection of the steel for the Main Street Realty Company's store and office building, 600 tons. The Lackawanna Steel Company will furnish the steel with the exception of the columns, which will be Bethlehem shapes.

Old Material.—Demand continues fairly active for most grades of scrap, although outside inquiry for turnings and borings, which was quite active the previous week, has fallen off materially. The business transacted has been mainly in small lots; consequently the movement for the week has been of comparatively small tonnage. Prices are practically unchanged from last week. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$13.00 to $13.75
Low phosphorus steel	16.00 to 16.50
No. 1 railroad wrought	14.00 to 14.50
No. 1 railroad and machinery cast scrap	13.75 to 14.25
Old steel axles	18.50 to 19.00
Old iron axles	22.00 to 22.50
Old car wheels	13.00 to 13.50
Railroad malleable	12.75 to 13.25
Boiler plate	12.50 to 13.00
Locomotive grate bars	11.00 to 11.50
Pipe	9.25 to 9.50
Wrought iron and soft steel turnings	7.25 to 7.70
Clean cast borings	7.00 to 7.50

New York

NEW YORK, August 23, 1911.

Pig Iron.—Inquiry is rather more active and a fair amount of business has been closed in the past week, all of it for delivery this year. Furnaces at Buffalo are receiving inquiry from a good many points, more from New York State than from New England or New Jersey. Few large amounts are under consideration, 200 to 500 tons being the range. One interest in New Jersey is asking for 750 tons of malleable iron. The market for the remainder of this year is close to $14.50 at eastern Pennsylvania furnace and $13.50, Buffalo, which would mean $15.20 in the one case and $15.25 in the other for No. 2 at Jersey City. The amount of iron recently asked for for 1912 delivery would indicate that business will not long be delayed for shipment at least over the first quarter, the question being just how much of an advance over 1911 prices can be secured. Buffalo sellers have talked $14; buyers will naturally stand for $13.75 or somewhat less. There is some variation in prices on current business and it remains to be seen how firmly sellers will hold for some of the advances that have been talked about. Production in Eastern districts is at the lowest point in many months. How much of the idle capacity will blow in on the taking of the first step in the establishment of higher prices is a question of some moment. One feature of the irregularity seen in recent prices is the offering of iron by certain furnaces in districts which they do not ordinarily enter, their idea being to divert a certain amount of their product and keep prices from being disturbed in their natural territory. There are, of course, some possibilities of similar action by sellers whose iron has been displaced, particularly if production increases. We quote as follows for Northern iron, tidewater delivery: No. 1 foundry, $15.50 to $15.75; No. 2 X, $15.25; No. 2 plain, $14.75 to $15. Southern iron is quoted at $15.25 to $15.50 for No. 1 foundry and at $14.75 to $15 for No. 2.

Finished Iron and Steel.—A large amount of structural work has been contracted for in Eastern territory and a fair volume of new projects have come into the market. Two large awards appeared practically overnight—one of 5,000 tons for the New York Central terminal, mainly sub-surface work, to the American Bridge Company, and the other of 1,700 tons for an addition to the Ritz-Carlton Hotel in New York, to Levering & Garrigues. Incidentally, it appears that the Ritz-Carlton Hotel in Philadelphia, 4000 tons, has been taken by the American Bridge Company, which has also received, it is believed, the 12,000 or 14,000 tons, placed in Chicago, for the Kansas City terminal. The 325-ton Scherzer bridge at Elizabeth, N. J., for the Central Railroad of New Jersey has gone to the Phoenix Bridge Company; a 300-ton bridge at Hartford for the New York, New Haven & Hartford Railroad has been awarded to the Pennsylvania Steel Company; a 180-ton Boston & Maine bridge has been taken by the Boston Bridge Works; 340 tons for a new plant at Phillipsburg, N. J., for the A. S. Cameron Steam Pump Works has been placed by the Ingersoll-Rand Company with the McClintic-Marshall Construction Company, and the 300-ton McDonald

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building on East Nineteenth street will be fabricated to hold at 1.30c. New York—Quotations remain: by the Eastern Steel Company. Post & McCord are to fabricate 3000 tons for two New York apartment houses, one of these of late origin. The Boston & Albany Railroad is in the market for 5,000 tons for bridge work; it is understood that the structural work for the Aeolian building is again being refigured; fabrication estimates are being made for an 11-story building in upper New York for the Locomobile Club garage and also for a 600-ton apartment house on Amsterdam avenue, for R. H. McDonald; and a building requiring 200 tons of steel is to be erected for the Montefiore Home in the Bronx. Inquiries are expected shortly for a 5,000-ton structure for a post office in Washington, D. C., D. H. Burnham & Co., architects, and the 4600-ton building in Washington for the Bureau of Engraving and Printing is promising to be an early subject for closure. Fabricating prices are reported a trifle better, but are sensitive and likely to remain so for some time. The American Bridge Company's Eastern shops are working at 90 to 95 per cent. of full capacity with orders sufficient to maintain that rate for a number of months. Bar iron is even stronger than was the case last week. Inquiries are coming in in good volume, and to a considerable extent from the railroads, and prices seem to hold at 1.30c. New York—Quotations remain: Plain structural materials and plates, 1.51c. to 1.56c.; steel bars, 1.41c. to 1.46c.; bar iron, 1.30c. to 1.35c.; all New York. Plain material and plates from store, New York, 1.80c. to 1.90c.

Cast Iron Pipe.—Pipe manufacturers report not only a better feeling but more life to trade. The inquiry in the past two weeks has been much better than for the three preceding months. The gradual stiffening in pig iron has apparently caused consumers of pipe to become more interested, especially those who have been waiting in the hope of buying at the bottom. The Warren Foundry & Machine Company has been awarded the contract placed by New Bedford, Mass., for about 1800 tons of 60-in. No important lettings are announced by Eastern cities in the near future. Carload lots of 6-in. continue to be quoted at $21 to $22 per net ton, tidewater.

Old Material.—Dealers have been considerably disappointed by the development of a much weaker feeling in heavy melting steel scrap. Consumers in eastern Pennsylvania have apparently secured a sufficient supply for their near future requirements and are offering considerably lower prices. As a result of this New York dealers have reduced their bids on steel scrap 50 cents per ton or more. Wrought pipe is also considerably weaker, following the withdrawal from the market of a large eastern Pennsylvania consumer who has purchased sufficient to supply his needs for some time. Cast scrap is also lower, with very little buying by founders. The entire old material market is weak and the tendency seems to favor a further decline in prices. Quotations are as follows per gross ton, New York and vicinity:

Old girder and T-rails for melting	$11.00 to $11.25
Heavy melting steel scrap	10.50 to 10.75
Relaying rails	20.50 to 21.50
Rerolling rails (nominal)	12.25 to 12.50
Standard hammered iron car axles	22.00 to 22.50
Old steel car axles	16.50 to 17.00
No. 1 railroad wrought	13.00 to 13.50
Wrought iron track scrap	11.00 to 11.50
No. 1 yard wrought, long	11.00 to 11.50
No. 1 yard wrougnt, short	10.00 to 10.50
Light iron	4.25 to 4.75
Cast borings	6.50 to 7.00
Wrought turnings	7.00 to 7.25
Wrought pipe	10.25 to 10.50
Old car wheels	10.50 to 11.00
No. 1 heavy cast, broken up	10.50 to 11.00
Stove plate	8.50 to 9.00
Locomotive grate bars	8.50 to 9.00
Malleable cast	10.50 to 11.00

Pittsburgh

PITTSBURGH, PA., August 23, 1911.—*(By Telephone.)*

Pig Iron.—The Standard Sanitary Mfg. Company has bought 7000 tons for delivery over the last quarter, consisting of Northern No. 2 and 3 foundry and gray forge, about half of this for delivery at its Allegheny, Pa., works and the remainder for its New Brighton, Pa., works. The No. 2 foundry for New Brighton will come from Valley furnaces and the price was $13.50 at furnace. The No. 2 iron for the Allegheny works will come from a local furnace and from an Eastern furnace, the price being $13.25 per ton at furnace. The gray forge iron will all come from Valley furnaces and the price was $13 at furnace. We also note a sale of 1000 to 1200 tons of Bessemer iron, deliveries being 250 to 300 tons a month commencing September, at $14.85 at Valley furnace, the iron being sold by a dealer; also 200 tons of Bessemer iron for September shipment at $15 at furnace. The market has quieted down in the past week, and there is not much new inquiry. We quote as follows: Bessemer, $15; basic, $13 for early delivery and $13.25 for extended delivery; No. 2 foundry, $13.50 to $13.75; malleable, $13.25 to $13.50; gray forge, $13, all at Valley furnace, the freight rate to Pittsburgh being 90c.

Steel.—Consumers are specifying very freely against contracts for billets and sheet and tin bars, and shipments of steel this month by the Carnegie Steel Company and other large steel concerns will show an increase over July. There is not much new demand, as most consumers are covered by long time contracts. We quote Bessemer and open hearth billets, 4 x 4 in. and up to but not including 10 x 10 in., $21, base, and sheet and tin bars in 30-ft. lengths, $22; 1½-in. billets, $22; forging billets, $26, base, usual extras for sizes and carbons, all prices being f.o.b. Pittsburgh or Youngstown district, with freight to destination added.

(By Mail.)

The volume of new business is holding up remarkably well for the summer months. While there is no contracting ahead by consumers a steady stream of small orders is coming into the mills aggregating a fairly large tonnage. Consumers are still pursuing the policy of buying only to cover actual needs, there being no incentive to anticipate requirements. Prices are not liable to advance in the near future, but on the contrary are weak on nearly all lines of finished iron and steel and are being more or less shaded. This applies particularly to plates, sheets, tin plate and wire products. In addition, the mills are able to make prompt deliveries and the consumer knows he will be able to get his material just when he needs it. The shading in prices that has been going on for some time is a matter of much concern to the heads of selling departments; it is due entirely to the fact that with the heavy increase in capacity in the last two years the country is not consuming more than 65 to 70 per cent. of what the mills can turn out, if that much. The mills, however, are running to-day at a greater rate of capacity than at any time since last March, and the outlook for the rest of this year is regarded as fairly encouraging. The wonder is that prices have not been affected more than they have, when it is remembered that for a considerable period operations were on about a 50 per cent. basis, and only in the last few months have shown a small but steady increase. There has been some buying of pig iron in the past week, one local consumer having taken about 7000 tons of foundry iron, and there are several other inquiries out for good sized lots. There is not much new inquiry for Bessemer or basic, but prices are fairly strong. Specifications against contracts for billets and bars are reported to be more active than in July, and $21, Pittsburgh or Youngstown, on billets and $22 on sheet bars seem to be maintained. Prices on the higher grade of furnace coke are stronger, but there is not much new inquiry. Sales of scrap are light, dealers being inclined to hold their material for higher figures.

Ferromanganese.—A Shenango Valley consumer has bought about 500 tons of foreign 80 per cent. at a price reported to be about $36.50, Baltimore, deliveries running through the first half of 1912. Some importers are asking $37.50 to $38 for next year, but there have been no sales at these prices. We quote foreign 80 per cent. ferro at $36.50 to $37, Baltimore, the higher price for next year shipment.

Ferrosilicon.—In spite of lack of new demand prices are very strong, and sellers continue to ask from $53 to $54, Pittsburgh, for 50 per cent. We quote blast furnace ferrosilicon as follows: 10 per cent., $23; 11 per cent., $24; 12 per cent., $25, f.o.b. cars Ashland and Jisco furnaces.

Muck Bar.—Mills rolling muck bar made from all pig iron are asking about $29, Pittsburgh, for it, but some grades can be bought for $28 to $28.50. The A. M. Byers Company has recently put on a large number of puddling furnaces at its plant at Girard, Ohio, but most of the muck bar there made is for its own use in the manufacture of iron pipe.

Skelp.—No new inquiry in the market. We quote:

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Grooved steel skelp, 1.20c.; sheared steel skelp, 1.30c.; grooved iron skelp, 1.45c. to 1.55c., and sheared iron skelp, 1.65c. to 1.70c., all for delivery at consumers' mills in the Pittsburgh district.

Wire Rods.—The quiet condition ruling in the wire trade is reflected in wire rods, which are dull, while specifications against contractors are not coming in at a very satisfactory rate. We quote Bessemer, open hearth and chain rods at $27, Pittsburgh, but the market is none too strong at this figure.

Steel Rails.—No important domestic orders have been placed in the past week, but the Carnegie Steel Company continues to receive some good sized contracts for standard sections for export. This company received new orders and specifications in the past week for upward of 3000 tons of light rails. The Edgar Thomson rail mills continue to operate to about 50 per cent. of capacity. Prices on light rails are as follows: 12-lb., 1.25c.; 16, 20 and 25-lb., 1.21c. to 1.25c.; 30 and 35-lb., 1.20c., and 40 and 45-lb., 1.16c. These prices are f.o.b. at mill, plus freight, and are the minimum of the market in carload lots, small lots being sold at a little higher price. Standard sections are held at 1.25c. per lb. for Bessemer.

Plates.—The leading steel car companies are figuring now on inquiries for about 15,000 cars, but no important contracts have been placed in the past week. The Pennsylvania Lines West have authorized the building of 35 locomotives at Altoona, Pa., consisting of 15 passenger, 10 freight and 10 switching engines. The general demand for plates from boiler shops and other consumers is said to be slightly better. We continue to quote ¼-in. and heavier plates at 1.35c., Pittsburgh, but in some cases 1.30c. is being named on specially desirable orders on both narrow and wide sizes.

Structural Material.—The American Bridge Company has taken the Point Bridge in this city, about 6000 tons, and it is reported that it is now filled up on all work it can turn out in the next six months. A very large amount of structural work is being figured on at present, and some of it will likely be placed in the near future. The Jones & Laughlin Steel Company reports that its fabricating shops are well filled and have recently been running double turn. This company is now prepared to furnish to the trade 24-in. beams in 105, 110 and 115-lb. sections. The 115-lb. beam will have a ¾-in. web and a flange of 8 in., while those of 105 and 110-lb. sections will be fractionally less. We continue to quote beams and channels up to 15-in. at 1.35c., Pittsburgh.

Merchant Steel.—This month promises to make a much better showing than July, the mills reporting that new orders and specifications are a good deal ahead of the first three weeks last month. Prices are being more or less shaded and have been for some time. Regular prices are as follows: Iron finished tire, ¼ x ½ in., and heavier, 1.40c., base; under these sizes, 1.55c.; planished tire, 1.60c.; channel tire, 1.80c., base; toe calk, 1.90c.; flat sleigh shoe, 1.55c.; concave or convex, 1.75c.; cutter shoes, tapered or bent, 2.25c.; spring steel, 2c.; machinery steel, smooth finish, 1.90c.

Hoops and Bands.—New orders so far this month have shown a considerable increase over the same period in July, and specifications against contracts are also coming in at a better rate. We quote steel hoops at 1.40c. and bands at 1.35c., extras on the latter as per the steel bar card.

Sheets.—Leading mills report that the present situation in the sheet trade is fairly satisfactory as far as demand and specifications are concerned, but not in the matter of prices. When the reduction in prices of sheets was made early in June it was believed it was heavy enough to prevent any further cutting, but this has not been the case, as prices have been more or less shaded since then. At present this amounts to about $1 per ton in most cases, but recently some mills have made concessions of $2 per ton. Jobbers are placing fairly heavy orders, and the leading sheet mills as a whole are operating from 70 to 75 per cent. of capacity. The higher prices ruling for spelter have made prices on galvanized sheets a little stronger. The full schedule of regular prices on black, galvanized and roofing sheets is printed on a previous page.

Tin Plate.—The demand for tin plate is dull now, as it always is at this season, but specifications against contracts are coming in nicely and the mills are running at present to about 75 to 80 per cent. of capacity, with good prospects of maintaining this rate of operations until October 1 or later. In the last week or so some weakness in prices has developed, and occasionally tin plate is being shaded about 10c. per box. We continue to quote 100-lb. cokes at $3.70 per base box, f.o.b. Pittsburgh.

Bars.—Most of the large consumers of both iron and steel bars have covered their requirements for some time ahead, and as a result the bar mills are not entering as much new business now as they were two or three weeks ago. However, specifications against these contracts are coming in quite freely and shipments of steel bars this month by the mills promise to be heavier than in July. There is still some weakness in prices of steel bars, and in some cases orders are being taken at 1.20c., but it is believed that this figure is bottom of the market. The new demand for iron bars is rather quiet and specifying against contracts is light. We continue to quote steel bars at 1.20c. and iron bars at 1.25c. to 1.30c., Pittsburgh.

Rivets.—New orders are fairly active and specifications so far this month are heavier than in the same period in July. Prices are still being shaded on good orders. We continue to quote structural rivets at 1.70c. to 1.75c. and boiler rivets at 1.80c. to 1.85c., but in very exceptional cases and for desirable business these prices are slightly shaded.

Wire Products.—The new demand for wire and wire nails continues to be only for small lots to cover actual needs and to allow jobbers to maintain a fair assortment of sizes in stock. Fall trade should open up early next month. Prices on both wire and nails are still being shaded about $1 per ton. Regular prices are as follows: Galvanized barb wire, $2 per 100 lb.; painted, $1.70; annealed fence wire, $1.50; galvanized, $1.80; wire nails, $1.70, and cut nails, $1.60, all f.o.b. Pittsburgh, with full weight added to point of delivery.

Spelter.—Prices are not at strong as a week ago. We quote prime grades of Western at 5.97½c., East St. Louis, equal to 6.10c., Pittsburgh. Futures are quoted at slightly lower prices.

Railroad Spikes.—The new demand is quiet and mostly for small lots. We quote spikes at $1.50 to $1.55 per 100 lb. for base sizes, f.o.b. Pittsburgh.

Shafting.—Conditions in this trade are very unsatisfactory, the new demand being dull, while prices are more or less demoralized. For ordinary lots, shafting is being quoted at 60 and 7½ to 60 and 10 per cent. off. In some cases slightly lower discounts are named on desirable orders.

Merchant Pipe.—The Medina Gas & Fuel Company, Lima, Ohio, is expected to place an order this week for about 63 miles of 10-in. line pipe, to be used for taking gas into Mansfield, Ohio. This is about the only large line in the market at present, but several gas and oil projects are being figured on, that will take a very heavy tonnage of pipe if they go through. The general demand for merchant pipe is keeping up very well for the summer months, and the mills are entering more actual orders than usual at this season. The leading mills are estimated to be running at 65 to 70 per cent. of capacity. Prices on both iron and steel pipe are reported as being fairly well maintained, and regular discounts are printed on a previous page.

Boiler Tubes.—The new demand for railroad tubes is reported to be a little better, but merchant tubes are dull and orders for only small lots are being placed. Prices on boiler tubes are very low, and regular discounts continue to be shaded.

Coke.—Several of the Valley blast furnaces that are not covered on their supply of furnace coke for the remainder of the year are sounding the market, but have not decided whether they will place contracts or buy from month to month, this depending on the prices that are named on their inquiries. The best grades of furnace coke seem to be a little firmer, and we note sales of about 5000 tons of standard Connellsville for prompt shipment at $1.50 per net ton at oven. The output in the upper and lower Connellsville regions last week was 304,044 tons, an increase of about 14,000 tons over the previous week.

Iron and Steel Scrap.—Not much scrap is being sold by dealers to consumers, as the latter are not satisfied that present prices can be maintained and are staying out of the market. Stocks held by consumers are fairly heavy and two leading users have asked that shipments be suspended for 10 days, until they can

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reduce their stocks. Dealers are firm in their ideas as to prices, and are not forcing their scrap on the market. We note sales of about 2000 tons of heavy melting scrap at $13.25 delivered to buyer's mills, and also a sale of about 1000 tons of low phosphorus melting scrap at slightly less than $16, delivered. Dealers now quote as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$13.25 to $13.50
No. 1 foundry cast	13.25 to 13.50
No. 2 foundry cast	12.75 to 13.00
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	11.75 to 12.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	13.50 to 13.75
No. 1 railroad malleable stock	12.75 to 13.00
Grate bars	10.75 to 11.00
Low phosphorus melting stock	16.00
Iron car axles	23.00 to 23.50
Steel car axles	17.50 to 18.00
Locomotive axles	23.00
No. 1 busheling scrap	12.00 to 12.25
No. 2 busheling scrap	8.50 to 8.75
Old car wheels	13.00 to 13.25
Sheet bar crop ends	15.25 to 15.50
*Cast iron borings	9.50 to 9.65
*Machine shop turnings	9.75 to 9.85
Old iron rails	15.50 to 15.75
No. 1 wrought scrap	13.50 to 14.00
Heavy steel axle turnings	10.00 to 10.25
Stove plate	10.50 to 10.75

* These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

Cincinnati

CINCINNATI, OHIO, August 22, 1911.—(*By Telegraph.*)

Pig Iron.—Due to the slack demand, the recent advance in Southern foundry iron prices has been considered in certain quarters as being a little premature. However, well authenticated reports now coming in would indicate that practically every producer in the South has fallen into line and that ten-dollar iron will soon be a thing of the past. A few furnaces with favorable freight differentials are probably able to book business at $10, Birmingham basis, for prompt shipment, but it is not believed that they will continue this policy very much longer. Among recent sales are 500 tons of Southern foundry iron, running from 2 to 2.5 silicon to a nearby melter at $10 for last half shipment. A consumer in northern Ohio took 300 tons of No. 2 foundry at $10.25, August-December delivery. For the same delivery, St. Louis territory furnished a customer for about 700 tons of strictly graded No. 2 foundry, taken at $10.50, Birmingham. Inquiries include one from a Kentucky melter for 500 to 1,000 tons of Southern No. 2 foundry for September-March movement. Indiana manufacturers are asking for miscellaneous lots of 100 to 300 tons. A Michigan manufacturer wants 2500 tons of Northern foundry and high silicon iron and another in the same district has put out an inquiry for 800 tons of low phosporous and Bessemer, all for last quarter delivery. Northern foundry continues slow, and the largest late sale reported is for 1,500 tons to a Southern Ohio consumer for this year's shipment. Malleable shows some improvement; a West Virginia concern contracted for 500 tons to be shipped during the fourth quarter and there are also several inquiries before the trade. Both Northern No. 2 foundry and malleable are quoted around $13.00 to $13.25 Ironton, for any delivery this year, and it is reported that a few producers are willing to book first quarter orders at $13.50, but the regular open quotations for next year's business do not run below $14.00. Both Northern and Southern basic are inactive. Based on freight rates at $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry and 1 soft	$14.00 to $14.25
Southern coke, No. 2 foundry and 2 soft	13.50 to 13.75
Southern coke, No. 3 foundry	13.00 to 13.25
Southern coke, No. 4 foundry	12.75 to 13.00
Southern gray forge	12.75 to 13.00
Ohio silvery, 8 per cent. silicon	16.95 to 17.20
Lake Superior coke, No. 1	14.70 to 14.95
Lake Superior coke, No. 2	14.20 to 14.45
Lake Superior coke, No. 3	13.70 to 13.95
Basic, Northern	14.20 to 14.45
Standard Southern car wheel	25.50 to 25.75
Lake Superior car wheel	19.00

(By Mail.)

Coke.—So far as this immediate territory is concerned there is no demand for coke with the exception of small lots of foundry coke for prompt shipment. The curtailment in production has helped to hold up prices in the Wise County and Pocahontas fields while the increased consumption in the Connellsville district has also aided in keeping up quotations there in spite of the fact that a number of dormant ovens have been lighted and are now in operation. For prompt shipment we quote furnace coke in all three fields around $1.55 to $1.65 per net ton at oven, with an additional 15c. to 25c. per ton added for contract business. Foundry coke remains at about $2 per net ton at oven for prompt movement to $2.15 to $2.35 for shipment during the next six months, although there are a few brands held at $2.40 for any future delivery.

Finished Material.—Steel bars continue to show improvement in demand, but it is conceded that some desirable business has lately been taken in this territory around 1.20c., mill; the ruling price, however, is 1.25c., Pittsburgh basis. Structural material is moving about the same as recent reports indicated, and, while it is rather a hand-to-mouth business just now, there are a number of large contracts to be let in this territory within the next few months that will probably bring out some spirited bidding. Local warehouse prices on steel bars and structural material are 1.70c. and 1.80c. respectively.

Old Material.—There is an apparent lull in the scrap market. Scrap melters have been holding off making any large contracts and are buying mainly for immediate requirements. Dealers generally believe that the demand is on the mend but present conditions do not warrant any advance in current quotations. The approximate prices paid by buyers for delivery in their yards, southern Ohio and Cincinnati, are as follows:

No. 1 railroad wrought, net ton	$10.50 to $11.00
Casting borings, net ton	4.50 to 5.00
Steel turnings, net ton	5.50 to 6.00
No. 1 cast scrap, net ton	9.50 to 10.00
Burnt scrap, net ton	6.50 to 7.00
Old iron axles, net ton	16.50 to 17.00
Bundled sheet scrap, gross ton	7.25 to 8.25
Old iron rails, gross ton	13.50 to 14.00
Relaying rails, 50 lb. and up, gross ton	21.00 to 22.00
Old car wheels, gross ton	10.25 to 11.00
Heavy melting sheet scrap, gross ton	10.00 to 10.50

Metal Market

NEW YORK, August 23, 1911.

The Week's Prices

Cents Per Pound for Early Delivery.

	Copper, New York.			Lead.		Spelter.	
Aug.	Lake.	Electrolytic.	Tin. New York.	New York.	St. Louis.	New York.	St. Louis.
17	12.75	12.62½	46.00	4.50	4.45	6.15	5.95
18	12.75	12.62½	46.00	4.50	4.45	6.15	5.95
19	12.75	12.50	.....	4.50	4.45	6.15	6.00
21	12.75	12.50	46.00	4.50	4.45	6.10	5.95
22	12.75	12.50	45.25	4.50	4.45	6.10	5.95
23	12.75	12.50	45.00	4.50	4.42½	6.10	5.95

The feature of the market is the relief in sight for pig tin. Stocks in hand are greatly depleted and early in the week pig tin reached 46c., but prices have eased off. Copper is quiet and quotations are nominal with no takers. Spelter is easy. Lead is dull.

Copper.—The copper market is extremely quiet. There seems to be a deadlock between buyers and sellers. Large sales of electrolytic are nevertheless rumored to have been made by important interests at concessions. Prices are largely nominal, with Lake quoted at 12.75c. and electrolytic at 12.50c., cash New York, for September and October delivery. Spot copper is scarce. The London market is quiet, and this morning spot copper was offered at £56 8s. 9d. and futures at £57 3s. 9d. The exports so far this month have amounted to 20,627 tons.

Pig Tin.—There is a change in the sentiment and condition of the pig tin situation. It is rumored that large shipments are on the way from Continental ports in steamers unnamed, and this has had its effect on the market. Early in the week consumers who found themselves short of stocks were obliged to pay premiums, but with the report of approaching arrivals prices have eased off. Pig tin is now quoted at 45c. and is expected to go lower. There is little if any tin in the hands of dealers, as attempts to buy even small stocks have been unsuccessful. In London this morning the market was quiet with spot offered at £190 and futures at £180 5s. The arrivals of tin so far this month were 2496 tons and 1310 tons are reported to be afloat.

Tin Plates.—The demand for tin plates continues fair in small quantities for varied purposes. The price

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is unchanged at $3.94 for 100-lb. coke plates. The quotation on foreign tin plates is unchanged at 13s. 9d., Swansea, Wales.

Lead.—Lead is dull and the recent manipulation is believed to have been abandoned. The leading interest is still asking 4.50c., New York. Outside sellers are asking 4.42½c., St. Louis, and there is every reason to believe that even this price is being shaded.

Spelter.—The spelter market continues dull and uninteresting. What demand there is seems to be all for quick shipments. Dealers are asking 6.10c., New York, and 5.95c., St. Louis.

Antimony.—The antimony market is still feeling the effects of the London dock strike and stocks in hand are scarce. Prices are expected to recede as soon as shipments are received. Hallett's is offered at 7.75c. and Cookson's is firm at 8.50c.

Old Metals.—The demand is slow. Dealers' selling prices, New York, are nominally unchanged, as follows:

Copper, heavy cut and crucible	$12.00 to $12.25
Copper, heavy and wire	11.50 to 11.75
Copper, light and bottoms	10.75 to 11.00
Brass, heavy	8.00 to 8.25
Brass, light	6.75 to 7.00
Heavy machine composition	10.50 to 10.75
Composition turnings	8.75 to 9.00
Clean brass turnings	8.00 to 8.25
Lead, heavy	4.20 to 4.25
Lead, tea	3.95 to 4.00
Zinc, scrap	4.25 to 4.30

Chicago

August 21.—The scarcity of tin, due to the recent situation abroad, has occasioned an advance in the local market in keeping with the extreme conditions. Spelter also is bringing a slightly higher price. The copper market has shown only moderate activity and a tendency toward weakness has been felt. We have revised our quotations for Chicago delivery as follows: Casting copper, 12.65c.; Lake, 13c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 46½c.; small lots, 48½c.; lead, desilverized, 4.45c. to 4.50c. for 50-ton lots; corroding, 4.72½c. to 4.75c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.10 to 6.15c.; Cookson's antimony, 9¼c., and other grades, 8¼c. to 8¾c., in small lots; sheet zinc is $8 f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 10¾c.; copper bottoms, 9½c.; copper clips, 10¼c.; red brass, 9½c.; yellow brass, 7½c.; lead pipe, 4c.; zinc, 5c.; pewter, No. 1, 26c.; tinfoil, 33c; block tin pipe, 37c.

St. Louis

August 21.—The week has shown considerable activity in tin, which is up to 46.85c. to-day, but copper is a shade off, with Lake quoted at 13.05c. and electrolytic at 12.95c. The latter situation is true in antimony, Cookson's being quoted at 8.72½c., a drop of an eighth; there has been a good business, however, so far as volume goes. Lead is quotable at present in this market at 4.45c. to 4.47½c., while spelter is still well held, sellers asking 6.10c., though the market quotation is put at 6.05c. In the Joplin mining district blende prices the past week have ranged from $44 to $45 per ton on the 60 per cent. zinc content basis, with choice lots commanding $48 per ton, the highest of the year. The market has been the strongest for eight months and very little ore brought less than $44. Activity is increasing in the mining district as a result of the higher prices and many mines have been unwatered, while old ones are being overhauled. The calamine production injured by the recent heavy rains flooding the mines is back to normal, but the price is stronger at $22 to $24 per ton on a 40 per cent. assay basis for metallic contents; choice lots have sold as high as $30, the highest figure paid for months. The surplus in all bins has been virtually cleaned up, thus strengthening the situation. Lead is firm at $60 to $62 per ton for the ore. Prices of old metals follow: Light brass, 5c.; heavy brass and light copper, 8c.; heavy copper and copper wire, 9c.; zinc, 3c.; lead, 3¼c.; pewter, 20c.; tinfoil, 29c.; tea lead, 3c.

Iron and Industrial Stocks

New York, August 23, 1911.

The past few days have witnessed rapid changes. Market sentiment became buoyant with the Presidential veto of tariff bills, and prices rose on Friday and Saturday only to be pulled down again when hopes of better conditions were chilled by the announcement of drastic retrenchment by important Western railroads. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com...	6⅜- 6½	Pressed Steel, com..	31⅞- 32¼
Allis-Chalm., pref...	19½	Pressed Steel, pref..	98 - 99
Beth. Steel, com...	29½- 31½	Railway Spring, com.	31 - 32½
Beth. Steel, pref...	59⅛- 60¼	Railway Spring, pref.	101½
Can. com.	9⅛- 10¼	Republic, com.	25 - 26⅞
Can, pref.	81½- 85¼	Republic, pref.	90⅛- 91⅞
Car & Fdry., com...	50⅛- 51⅛	Pipe, com.	13 - 13¾
Car & Fdry., pref...	116 -116½	Pipe, pref.	46¼- 49⅞
Steel Foundries....	35 - 36	U. S. Steel, com....	70¾- 73⅞
Colorado Fuel.....	27⅞- 30½	U. S. Steel, pref....	115⅜-116¼
General Electric....	151 -154¾	Westinghouse, Elec..	64½- 66¾
Gr, N. Ore Cert....	46½- 48½	Am. Ship, com.....	54½
Int. Harvester, com.	114⅛-118	Chic. Pneu. Tool ..	46⅜- 47¾
Int. Harvester, pref.	121½-123¼	Cambria Steel.....	44⅜- 45
Int. Pump, com....	33½- 36	Lake Sup. Corp.....	23 - 25
Int. Pump, pref....	86¾	Crucible Steel, com..	12 - 12½
Locomotive, com....	36 - 38	Crucible Steel, pref..	80½- 81½
Locomotive, pref....	107	Harb. W. Ref., com..	48
Nat. Enam. & St., com	16¾- 17	Harb. W. Ref., pref..	99
Nat. Enam. & St., pref	93 - 96		

William Salomon & Co., New York and Chicago, have recently sold at par and interest, the unsold portion of $1,000,000 6 per cent. serial gold Iroquois Iron Company debentures, dated December 1, 1910, due in annual installments of $100,000 from June 1, 1912 to June 1, 1921, but callable at 105 and interest, either as entire issue or any part (by lot), and after 1911 for sinking fund on any interest date on six weeks' notice. The management of the company is practically controlled by Rogers, Brown & Co. interests.

Dividends Declared

The General Electric Company, regular quarterly of 2 per cent., payable October 14.

Freight Rate Reductions from Buffalo.—The New York Central Railroad Company will establish new rules, effective September 4, which will permit the fabrication in transit of structural iron and steel in carloads at Syracuse. The stop-off privilege for fabrication—which includes cutting, punching, riveting and inspection—is to be charged for at the rate of 1½ cents per 100 lb. in addition to the through rate and will apply on traffic destined for Eastern points, with the exception of stations on the New York, New Haven & Hartford Railroad. The New York Central has also announced that after September 7 it will make numerous reductions in rates on iron and steel articles in carload lots and less on its Buffalo, Western, Rochester, Mohawk, and Pennsylvania divisions. The South Buffalo Railroad, which is the Lackawanna Steel Company's terminal and transfer road, will, in conjunction with the Lehigh Valley, Pennsylvania, Lackawanna and West Shore railroads, make reductions effective September 7 on steel rails from Lackawanna City (South Buffalo)—which is the Lackawanna Steel Company's shipping and terminal station—to points on the roads named.

The Imataca Iron Deposit in Venezuela.—A dispatch from Caracas says that the Venezuelan Government has signed a contract with a representative of the Canadian-Venezuelan Ore Company, of Montreal, ceding to the company the Imataca iron mine, which was part of the famous Fitzgerald concession. The Montreal company, it is stated, will develop the mine for operation on a large scale. The contract with the Government requires the company to deepen the bar of the Orinoco River and build a lighthouse. The Orinoco company, which formerly held the Fitzgerald concession, forfeited it in 1909 under the protocol signed by the late William I. Buchanan, then special American Commissioner in Venezuela.

The Keystone Bronze & Brass Company, New Brighton, Pa., has let a contract to the Penn Bridge Company, Beaver Falls, Pa., for the erection of a structural steel building addition, 32 x 50 ft., which will be used for the new furnace system that will be installed. It will increase the capacity of the plant from 150,000 to 300,000 lb. per month. A number of Schwartz down-draft furnaces have been ordered for melting bronze and brass, fuel oil being used. The company makes a specialty of railroad and rolling mill castings. An order has been received from the Pressed Steel Car Company for 175,000 lb. of railroad journal castings to be used for cars being built for the Southern Pacific Railroad Company.

Trade Publications

Exhausters.—The Green Fuel Economizer Company, Matteawan, N. Y. Bulletin No. 136. Size, 6 x 9 in.; pages, 20. Describes the low and standard speed types of planing mill exhausters built by this company, the former being a recent improvement designed to secure economy of power in operation. This has been secured by the substitution of a larger and slower running fan which while passing as great a volume of air as the high speed fan formerly used will consume less power and give the required volume and suction for picking up materials at the intake. Other advantages claimed for the slow speed fan which is of the cone type with a large number of blades are less wear and tear and vibration.

Smokeless Furnace.—The Model Stoker Company, Dayton, Ohio. Booklet illustrates and describes the Model automatic smokeless furnace, the special advantages of which are self cleaning, complete combustion, small power consumption, accessibility and durability.

Rock Crushing Machinery.—Allis-Chalmers Company, Milwaukee, Wis. Bulletin No. 1411. Gives general description and specifications for the various types of machinery built by this company which enter into the construction of rock crushing plants. These include rock crushers, elevators, belt conveyors, bin gates, cars and hoists. Illustrations of these different machines are given and a number of line engravings, showing various installations built by this company complete the bulletin.

Packings.—The Mechanical Rubber Company, Cleveland, Ohio. Section D of its loose leaf catalogue. Devoted to the various types of packings which this company is prepared to furnish. These include coil, ring and spiral packings in various sizes and brands, high and low pressure diagonal packing, throttle and valve stem packing, hydraulic and steam packings and various types of sheet packings and gasket. The catalogue is arranged on the loose leaf principle and illustrations of the different brands are given on the upper portion of the leaves while a brief list of the uses to which it may be put and the different sizes in which it is made occupy the remainder. Tables giving the temperatures of dry or moist steam, water heads and equivalent pressures and areas and circumferences of circles complete the catalogue.

Soot Cleaner.—G. L. Simonds & Co., 801 Steinway Building, Chicago, Ill. Catalogue. Size, 6 x 9 in.; pages, 32. Calls attention to the Vulcan soot cleaner and shows how the Vulcan system can be applied to water tube and return tubular boilers, economizers, superheaters and combustion chambers. The question of keeping boiler tubes clean is discussed and the advantages of using this system which is a stationary piping one operated by valves outside the boiler setting are pointed out.

Rolled Shapes for Metal Trim.—United States Metal Products Company, 203 West Fortieth street, New York, N.Y., which is a consolidation of the John W. Rapp Company and the J. F. Blanchard Company. Loose-leaf album of 10½ x 13½-in. pages, known as catalogue No. 105, giving full size dimensioned profiles of the bars and moldings going into the construction of hollow steel and Kalamein metal doors, windows, partitions and trim. The products are cold rolled and may be obtained with imitative wood finishes. The numerous drawings are calculated to be of direct practical value to the engineer and architect and the loose-leaf feature allows for ready insertion of drawings of new shapes. The catalogue is the design and compilation of C. Dickens Sternfels, advertising manager of the company.

Electric Control Apparatus.—Cutler-Hammer Mfg. Company, Milwaukee, Wis. Pamphlet entitled "Cutler-Hammer Control in New York." Size, 5 x 8¼ in.; pages, 48. Is an attempt to illustrate and describe some interesting applications of electric power and ingenious forms of electric control in New York City. This has been done by showing the various buildings in which this company's apparatus has been installed on the left-hand pages, while the facing ones contain a brief description of the building and the purposes to which the apparatus is put. Among the buildings shown is the Metropolitan Life Building, in the tower of which is a large clock that has the chimes controlled by solenoids. Other applications are the use of the Kohler control system for printing presses, the use of the Cutler-Hammer dimmers in some of the large theatres, push-button fan control in the Custom House and a number of other special but nevertheless interesting applications of the company's controllers and motors in the different hotels and office buildings of the city.

Heat Regulator.—Electric Heat & Regulator Company, 705 Collins Building, Minneapolis, Minn. Folder. Describes and illustrates the Minneapolis heat regulator, a new type which is controlled by a thermostat. If desired a time attachment can be furnished that enables the temperature control point to be changed at any predetermined hour. The illustrations show the regulator with the time attachment, the motor used and reproductions of records of the temperature in houses where the device was and was not employed.

Rock and Hammer Drills.—The Sullivan Machinery Company, 112 South Michigan avenue, Chicago, Ill. Three bulletins. No. 66A describes the standard Sullivan reciprocating type of rock drill used for excavating rock under ordinary conditions. These drills are made in two types with differential and tappet valves. Both drills are illustrated together with the two valves and sectional views of both are also included. No. 66B lists the accessories required for rock drilling work, such as drill mountings, steel, hose and various kinds of tools. All of these are briefly described and the text is supplemented by half-tone engravings and dimension and specification tables. No. 66C treats of the Sullivan hammer drills for mining and construction work. The limits of the use of hammer drills, their advantages, development and action are first discussed, followed by detailed descriptions of the air-feed stoping drill and two types of hand hammer drills. Both of these descriptions are supplemented by a line and half-tone engravings showing the drills in use and giving details of their construction.

Turbine Generators and Steam Flow Meters.—General Electric Company, Schenectady, N. Y. Two bulletins. No. 4836 relates to a steam flow meter which is made in two styles, one for recording and the other for merely indicating the rate of flow. No. 4845 contains illustrations and descriptive matter in considerable detail of the Curtis turbine-generator sets which are made in varying capacities from 100 to 1000 kw. These turbines are designed to operate at a speed of 3600 r. p. m., which is the maximum speed permissible for use with the 60-cycle alternating current generators employed. The construction of the generating set is described at length, and there are a number of views showing the units installed in various types of industrial plants.

Fans.—B. F. Sturtevant Company, Hyde Park, Mass. Catalogue No. 180. Size, 6½ x 9 in.; pages, 92. Describes in detail the multivane volume fans built by this company. An effort has been made in compiling this catalogue to include such information as would aid prospective purchasers in securing the type and size of fan best suited to meet their requirements. The description of the design and the construction briefly gives the reasons for the high efficiency and great durability secured with this fan while engravings supplementing the test suggest a few of the many combinations possible where direct-connected engines, motors and steam turbines are employed to furnish the power required. Eighteen pages of tables of installation data give the pressure, volume and horse power for a wide range of conditions as well as the proper type and size of engine, motor or pulley for driving the fan. These tables have been compiled from the results of a number of tests. The last 32 pages of the catalogue are devoted to dimension tables for all sizes and types of standard fans which should be of great assistance in making preliminary layouts of apparatus.

Saw Grinding Wheels.—Norton Company, Worcester, Mass. Pamphlet. Contains suggestions on the selection and use of grinding wheels for saw and knife sharpening. The shapes of wheels adapted to gumming saws, grinding molder cutters, etc., and those furnished for knife grinding machines are all illustrated. In the case of the wheels for knife grinders the names of the different machines are given together with the various dimensions of each type.

Coal Crushers.—Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 41. Describes the Jeffrey single roll crusher for reducing large lump and run-of-mine coal to stoker size in a single operation. Some of the points emphasized are accessibility of the crusher roll, the toothed segments of the roll face, and a safety device for action when an undue stress comes on the machine from any cause. A rule for capacity of crushers and tables of speed, capacity and horse power are given.

Railroad Electrification.—General Electric Company, Schenectady, N. Y. Two bulletins. The first, No. 4834, is a reprint of an article describing the electrical equipment of the Detroit River Tunnel which appeared in the Electric Railway Journal. Views of the equipment are given together with line drawings showing the location and profile of the tunnel, dimensions of the locomotives and wiring diagrams. The other bulletin, No. 4851, which is entitled "Electricity in the Service of Steam Railroads," treats of the various electrified railroads for which this company has furnished apparatus and include the New York Central electrification and the Cascade Tunnel of the Great Northern Railroad. Space is also given to the gas-electric motor cars now in use as well as the electrical equipment of steam railroad shops, signals with generating sets and mercury arc rectifiers for charging the batteries, train lighting steam turbines and the illumination of railroad stations. All of these applications are illustrated and briefly described.

Forging Presses.—The United Engineering & Foundry Company, Pittsburgh, Pa., Mailing card. Deals with the high-speed steam-hydraulic forging press built by this company. The engravings show the presses in use in America and India as illustrated in *The Iron Age*, January 26, 1911.

Motor Drive.—General Electric Company, Schenectady, N. Y. Two bulletins. No. 4833 describes a number of installations of motor-driven gold dredges. The illustrations include views of the dredges as well as the motors and their applications. No. 4835 illustrates and describes various types of motor-driven pumps designed for different purposes, including those for mine use, sewage disposal plants and dry docks, irrigation projects and house water supply. The various combinations include induction and direct current motors for driving centrifugal, turbine, mine, Underwriters' and sinking pumps. Tables giving the theoretical horsepower required to raise the water to various hights, the friction of water in pipes and elbows, and data on various points in connection with pumping installations complete the bulletin.

Valves.—The Kelly & Jones Company, Greensburg, Pa. Mailing card. Relates to the K. J. iron body valves which are made in the globe, angle, cross, safety, swing check, [illegible] pattern with either screwed or flanged ends.

S. DIESCHER & SONS,
Mechanical and Civil Engineers,
PITTSBURGH, PA.

Obituary

Franklin B. Shuster

Franklin B. Shuster, president and treasurer of the F. B. Shuster Company, New Haven, Conn., died at his home in that city, August 14. He was born at New Haven, May 10, 1866. After learning the trade of a machinist with John Adt & Son, he became foreman of the machine and tool department of the New Haven Clock Company. Later he was for about six years with the Wilmot & Hobbs Mfg. Company, now the American Tube & Stamping Works, of Bridgeport, Conn., in charge of the machine and tool designing departments.

On the death of John Adt in 1895, Mr. Shuster purchased the business, Mr. Adt's son having died some years previous, and in 1898 the F. B. Shuster Company was incorporated. The business was established in 1866 by John Adt, who invented and manufactured the Automatic wire straighteners and cutters and riveting machines which are now being turned out in large numbers and improved forms by the company. Mr. Shuster invented and patented many new machines and tools and increased the business so that these machines are shipped to all parts of the world.

FRANKLIN B. SHUSTER.

Mr. Shuster was a genial, courteous gentleman, winning friends wherever he went. He was a member of the National Association of Manufacturers, and of the Quinnipiack Club and other local organizations. He leaves a widow, a son and a daughter.

HIRAM OLDERSHAW, New Britain, Conn., secretary of the Vulcan Iron Works of that city, died August 18, aged 65 years. He was born in Nottingham, England, and was brought to this country in childhood. He went to New Britain as a young man, and began his connection with the Vulcan Iron Works, to which he devoted his business life. He was first employed as superintendent, and while holding the office of secretary had the general managership of the business. He leaves a widow, a daughter and two sons, one of whom, Arthur H. Oldershaw, is treasurer of the same company.

OMAR N. STEELE, manager of the Cleveland yards of the American Shipbuilding Company, died August 17, aged 68 years. He was an engineer on the Great Lakes for 20 years and brought out the first iron boat built on the Lakes. He became associated with Robert Wallace of the Cleveland Shipbuilding Company, now a part of the American Shipbuilding Company, about 27 years ago.

WALTER I. WEED, treasurer of Weed & Co., wholesale and retail dealers in hardware and iron and steel, Buffalo, N. Y., died in that city August 17 of heart failure, aged 34 years. He was the son of Hobart Weed, the president of the company, and was one of the most prominent men in the hardware trade in western New York.

JOHN H. OSBORNE, a brother of the late David M. Osborne and with him one of the founders of the Osborne works, now the property of the International Harvester Company, at Auburn, N. Y., died August 16, aged 79 years. He retired from business on the transfer of the works at Auburn to the International Harvester Company.

THOMAS C. RICHARDS, Winsted, Conn., president, treasurer and the founder of the T. C. Richards Hardware Company, of that place, died August 17, aged 76 years. The business was established in New York City in 1863 and was moved to Winsted in 1874.

Proposed Iron and Steel Tariff Changes

President Taft sent to the House on Friday, August 18, a message vetoing the bill which puts fencing wire, cotton ties, certain kinds of lumber, agricultural implements, meat, flour and several other commodities on the free list. One of the reasons given for the veto was elaborated at length in the President's message of the day preceding, vetoing the bill reducing the wool tariff. The President argues that the Tariff Board should first make its report on the schedules involved in these two bills and points out that the country will need to wait but three months to receive the report of this board. Referring to the provisions of the free list bill the President says that it would inevitably lead to the greatest uncertainty, imposing a heavy burden on the administrative branch of government, in addition to creating "disastrous uncertainty in commercial circles and a burdensome amount of litigation." The President finds the language so ambiguous that it is impracticable for the Treasury Department to give an exact estimate as to the diminution in revenue which will follow its passage. Both the wool tariff bill and the free list bill failed to pass over the President's veto.

On Thursday, August 17, the Senate passed the House cotton tariff revision bill as amended by a resolution of Senator Cummins of Iowa, reducing the tariff on certain steel products. The Cummins amendment provides for a reduction in the duty on structural steel from ½ cent to ¼ cent per lb. whether plain or fitted for use. It also reduces other duties in the steel and iron schedule by 40 per cent. of their present amount. The amendment reduces the duty on machines used in cotton fabric production to 30 per cent. and adds coal to the Canadian reciprocity list under certain conditions. On Monday, August 21, the House concurred in the Senate amendments to the cotton bill by a vote of 180 to 107, and on the next day, just before the adjournment of Congress, President Taft vetoed the bill.

A New 24-Hour Record in Unloading Iron Ore

In *The Iron Age* of August 17 a new record of 2550.5 gross tons an hour in unloading a single iron ore cargo was mentioned, four Hulett 15-ton machines being employed at the Conneaut, Ohio, docks. All records for unloading iron ore in a day of 24 hours on any lake dock were broken at the docks of the Pittsburgh & Conneaut Dock Company at Conneaut last week. From 6 a. m. August 18 until 6 a. m. of August 19, 61,661 tons of ore was unloaded from these docks, this being at the rate of 2569 tons per hour. This ore was taken from eight boats, but the tonnage was not the entire cargoes of the vessels, some of them being partly unloaded at the beginning and others only partly unloaded at the expiration of the 24-hour period.

The annual outing of general office employees of the American Sheet & Tin Plate Company, Pittsburgh, was held at Cascade Park near New Castle, Pa., on Saturday, August 19, the employees and their friends going to the park by special train over the Pittsburgh & Lake Erie Railroad. The outing in every way was one of the most successful ever held. A handsome programme of the events was issued, this being the work of H. V. Jamison.

A number of patents were granted August 8 to William H. Bristol, of the Bristol Company, Waterbury, Conn.

New York's Barge Canal and Iron Ore Freights

A paper on "The New York State Barge Canal," by William B. Landreth, read before the Engineers' Club of Philadelphia, gives interesting data concerning construction methods and costs. The author estimates that the work will be completed early in 1915. The following extract is from a discussion of the paper by John Birkinbine, Philadelphia, which appears in the July Proceedings of the Engineers' Club of Philadelphia:

The data presented in the paper must impress upon us the facts that our sister State of New York built, many years ago, a canal system which has been jealously maintained, and that now $101,000,000 is being expended to convert it into barge canals to accommodate boats of capacities suited to advanced conditions. The maintenance of the canal system has added greatly to the material progress of the Empire State, and the array of important cities along the Erie Canal testifies to the value of this improvement, for, while the canal system has continued to do a large business, at least five through lines of railroad have been built to connect the Hudson River with Lake Erie.

The State of Pennsylvania expended $40,000,000 (and private capital largely supplemented this) in the construction of a canal and slack-water system aggregating 1100 miles in length which has gone out of use, with the exception of the stretches along the Delaware, Lehigh, and Schuylkill rivers, on which an important traffic is maintained, and the slack-water navigation along the Monongahela River. Whether the improvement of the waterways of this State will be again taken up is problematical, but in view of the possibilities of such improvement the Pennsylvania Water Supply Commission approves applications for the construction of dams or bridges across important streams, with a proviso that, should the State or National Government in the future establish improved waterways, the dams and bridges will be altered to meet the changed conditions.

The capacity of barges which the improved New York canal will pass (1500 tons) admits of applying improved means of loading and discharging; for one barge will carry the equivalent of a train load of freight. A producer of iron ores in large quantities informed me that it was expected that when the barge canal is completed the freight on iron ore from Lake Champlain to New York harbor will not exceed 50 cents, and the charge from Lake Erie to New York will approximate the same amount.

The advantage of railroad service is that material or product can be loaded as large or small units on cars at mines or industries and delivered immediately at the works or manufactories where they are to be used, whereas in water transportation the freight must be conveyed from the locality where it originates to barge or vessel, and transferred from these to the consumer, requiring a breakage of bulk. Modern methods in dock construction, loading and unloading devices materially reduce this expense, where the volume is sufficient to utilize these satisfactorily. In this connection it may be interesting to note the fact that 140,000 tons of sugar from Hawaii were carried to Philadelphia in 1910, using the Tehuantepec Railroad across the Mexican isthmus, the modern facilities provided at the termini of this road permitting of breaking bulk at a material saving over the all-water route.

The New York barge canal and modern propelling facilities for barges are confidently expected to advance greatly the business interests of that State, and to increase the traffic between the Lakes and the ocean.

The Orenstein-Arthur Koppel Company, Machesney Building, Pittsburgh, has shipped to the Fairmont & Morgantown Railroad, West Virginia, 125 V-shaped dump cars of 1½ sq. yd. capacity, to be used in grading the road which, when completed, will be used as a coal road. The company also shipped a consignment of cars to Cuyahoga Falls, Ohio, to be used in the construction of a dam that will supply water to the town and to an artificial lake.

The Mumford Molding Machine Company has opened an office at 75 High street, Boston, where it will be represented by T. J. Mumford 2d.

Michigan's Iron and Copper Mines

Prof. J. R. Finlay, mining expert of New York, has made his report to the State Tax Commission of Michigan as a result of the appraisal he has been making for two months. The appraisal was made by direction of the Legislature in order to determine whether these classes of property are paying their share of taxation.

He values the copper mines at $69,815,000, the iron mines at $119,485,000 and the coal mines at $861,745, making a total of $190,161,745. Of these figures the increase comes particularly in iron mines, while the copper mines are not increased to any extent over the figures at which these properties have been assessed. Discussing the copper situation, Professor Finlay says:

> Only nine copper companies in Michigan made money during the last five years. If we could assume that these mines would last forever the investor would probably be satisfied with five per cent income and he would probably capitalize their average earnings of $8,240,000 into a present value for the group of $164,800,000. The fact is that these mines are not worth even half this amount, because their future life is not by any means perpetual. On the contrary their future is much less promising than it is popularly supposed to be. These mines have shown unusual persistence in depth, but the limit in profitable working is now in most cases in plain sight. It must not be forgotten that the tonnage maintained now is three times as great as the mines have averaged in their 50 years of life.

The copper mines were valued by Professor Finlay, by counties, as follows: Kewenaw, $10,700,000; Houghton, $58,815,000; Ontonagon, $300,000. The iron counties were valued as follows: Gogebic, $41,560,000; Iron, $23,339,000; Dickinson, $11,508,000; Baraga, $335,000; Marquette, $42,743,000. For the coal mines in certain counties the following valuation is fixed: Bay, $484,709; Saginaw, $350,924; Midland, $12,862; Tuscola, $3,500; Shiawasse, $9,750.

"These valuations are based substantially on past and present earnings," the report says. "During the past five years profitable copper mines earned $50,937,690.27 over expenditures, but I consider these earnings abnormal, being mainly due to the great boom of 1906 and 1907. The iron mines earned in five years $57,551,202 without the benefit of any abnormal prices."

The estimate is made that the Marquette, Menominee and Gogebic iron ranges will produce 360,000,000 tons more of ore.

The New Pittsburgh Bridge.—The contract for the erection of the superstructure of the North Side Point Bridge, Pittsburgh, was awarded to the American Bridge Company, the lowest bidder, at $297,792 for the finished structure. The piers and abutments for the bridge are being built by the Dravo Contracting Company, Pittsburgh; they are to be carried to bedrock by the pneumatic process, and are to be of concrete construction with stone facings. This part of the work is to be completed by June 1, 1912, which will probably permit the bridge to be completed before cold weather of next year. The bridge will consist of approaches and two river spans, each of which will be 531 ft. in length. The total width of the structure will be 60 ft., providing a 36-ft. roadway and 8-ft. sidewalks. The roadway will be paved with creosoted wood blocks and the sidewalks with reinforced concrete. The floor of the bridge will be 70 ft. above the mean level of the river at that point to provide ample room for river traffic.

Youngstown Sheet & Tube Profit Sharing.—More than $200,000 was paid out August 19 by the Youngstown Sheet & Tube Company, Youngstown, Ohio, in bonuses to its employees under the profit-sharing plan being conducted by the company. All the employees, with the exception of the officers and a few others on the payroll who have been engaged in construction work and did not directly help in making the profits for the company, participated in the distribution of a bonus of 5 per cent. of the amount they had earned during the year. This bonus was granted by the company in spite of the fact that its profits in the past year were much smaller than in the year before, when the same award was made.

The Federal Engineering Company, House Building, Pittsburgh, sales agent for the Oil City Boiler Works, has been awarded a contract for two 204-hp. Geary water-tube boilers, for installation at Manitowoc, Wis., and one 500-hp. boiler of the same maker for the Schmulbach Brewing Company, Wheeling, W. Va.

The Croton Magnetic Iron Mines Suit

A Review of a Most Interesting Case

Settlement has been made by the city of New York with the Croton Magnetic Iron Mines for damages claimed as resulting from the city sequestering part of the company's property, including its railroad connection, and for interference with future exploitation of the iron ore deposit of this company. This settlement is the sequel of litigation which had been in progress for nearly five years before a commission consisting of William Church Osborn, John Quinn and William M. Benjamin, the Croton Magnetic Iron Mines Company being represented by Richard T. Greene and the city of New York by I. J. Beaudrias.

This litigation attracted attention because of the amount of damages claimed, the number and reputation of the witnesses examined and the wide scope of testimony which included the geological formation, the character and quantity of the material, the costs and methods of mining, the expenditures requisite for magnetic concentration and nodulizing, freight rates on the mineral and numerous details.

Believing that a synopsis of the testimony would be of interest to our readers, we have had 4,000 pages of printed and type-written matter revised and present below in as concise form as possible many of the salient features, prefaced by a sketch of the property in dispute, which is intended to describe the deposit, its location and the causes which brought about the litigation, all abstracted from testimony presented.

History

The property which was sequestered in 1906 by the city consists of a deposit of iron ore of admitted great extent in Putnam County, New York, two miles south of the village of Brewster, on the Harlem division of the New York Central Railroad. A dense magnetite is exposed by a large tunnel penetrating what is known as Theall Hill for a distance of 1,150 ft., with side drifts and rooms, by a shaft north of the tunnel with levels at 80 ft. and 155 ft. below the Theall tunnel floor, and by two pits and a drift south of the tunnel. The ore was also traced by magnetic needle most of the distance to a shaft at Brewster, and its existence proved by intermediate explorations, this extension of the deposit passing through the property of the Croton Magnetic Iron Mines for 2,000 ft. north of the shaft above mentioned.

In providing for additions to the storage of the New York water supply, the Aqueduct Commission located a large reservoir on the Middle Branch of the Croton River, which will back water close to the property of the Croton Magnetic Iron Mines, and constructed a feeder canal from the East Branch of Croton River (on which a diversion dam is placed) through a portion of the Croton Mines property and along the right of way of its railroad switch.

The property having been sequestered in 1906 by the city of New York for the purposes mentioned, it became necessary for the Croton Magnetic Iron Mines to establish the damage done by the city taking a part of the deposit, by the loss of the railroad connection, dumping ground, etc., also for any injury to the remnant of the property as a mining proposition.

The existence of the iron ore deposit in Theall Hill was reported in 1839, but it was not until 1880 that active operations were started by driving a tunnel of sufficient size to accommodate a double track railroad, and from this excavation, its side drifts or rooms and an opening to the south, 30,000 tons of iron ore was shipped to blast furnaces and used, the material disposed of being the richer portion of the mine or hand-picked ore. Mining operations ceased in 1883.

Although some rich magnetic ore can be won from the deposit, the mass of the ore body carries insufficient iron to be classed as merchantable, except by removing the leaner or barren portions, and as sulphur and phosphorus are present in proportions in excess of what is considered desirable, much of the mineral as mined requires to be improved. To enrich and improve the ore, a concentrating mill equipped with crushers, rolls, screens and water jigs were erected, which proved expensive to operate, and the water supply was inadequate to maintain its operation.

A 700-ton dry concentrating mill, with roasting kilns and magnetic separator, was erected in 1890 and handled up to 525 gross tons of crude material per day of 20 working hours, for although the screening and crushing capacity was ample the output was restricted by the inadequacy of roasters and separators.

This mill was supplied mainly with rejected ore of earlier mining operations, which were charged into three Davis-Colby roasters, fired with petroleum, the consumption amounting to 3.8 gal. of Lima oil per ton of crude ore. The material crushed to 12 mesh was passed over separators, the concentrates going to shipping bins and the middlings being recrushed for subsequent treatment. A large expenditure of money was also made to produce, by means of a direct process, metal or iron sponge, the method followed being to charge iron concentrates and solid carbon into externally heated cylinders with the expectation that the ore would be reduced. The material produced was run into vessels with tar, so as to prevent loss and as an aid for convenience in shipping.

In the meantime the tunnel had been extended to a length of 1,100 ft., large rooms were opened, the shafts and other pits mentioned sunk and plans made for a concentrating plant of large capacity, when the owners became financially involved and work was suspended, the concentrating plant being subsequently destroyed by fire, and the property remained practically inactive until the city of New York sequestered a portion of it.

Under the circumstances described the city of New York claimed that the property must be considered either as an abandoned mine or as a deposit of iron ore of little or no value, while the claimant sought to prove that the property had intrinsic value in a large body of ore, which by improved methods could be mined, concentrated, nodulized and shipped to consumers within such distance as would require but a small expenditure for freight.

The deposits of magnetite in the vicinity of Brewster, including the property of the Croton Magnetic Iron Mines, were reported upon by various experts, and a geological discussion was prepared by the late N. F. Shaler of Harvard. The deposits also received detailed attention in the census of 1880 by Prof. Raphael Pumpelly.

Basis of Claims for Damages

In 1891 John Birkinbine, consulting engineer, of Philadelphia, Pa., and W. B. Kunhardt of New York, now of the Carpenter Steel Company, made an elaborate report on the property of the Croton Magnetic Iron Mines, the developments being those above described. This report includes maps, cross-sections, records of numerous analyses and estimates of the cost of mining and treating ore and of the amount obtainable. It stated that the average of the net available ore amounting to 4,500,000 tons (then assuming the deposit to exist to a depth of 200 ft. below the Theall tunnel) was 37 per cent. of iron, but no money value was placed on the property as a whole, for this had not been requested. This report was introduced as evidence in the early stages of litigation, and the contest for damages in the condemnation proceedings naturally centered mainly about it.

According to the Birkinbine and Kunhardt report, the Croton Magnetic Iron Mines property consists of the main deposit with some outlying stringers of ore; the length of the ore body on the property of the company 4,100 ft. (of which somewhat over 1,300 ft. was sequestered by the city); the width 90 ft., with a general course north, 34 deg. east, south 34 deg., west the dip 70 deg. to the east and the pitch of 10 deg. to 25 deg. to the north. The hanging wall is of syenitic gneiss with a face of chloritic shale, but there is no well defined footwall.

The contention of the claimant was that by the condemnation of the city of New York the iron ore body had been rendered of little practical value, because the dumping ground for refuse, the mill site and the means of

access to the railroad had been taken and that the property sequestered upon which no mining had been done represented a value to the owner of $960,000 based on 2,400,000 tons of ore in place at 40 cents per ton, of which 25 cents per ton was considered as royalty on the ore and 15 cents per ton mining profit. Also that the residue of the property upon which the developments of the company were located was estimated to contain 9,600,000 tons which could not be economically exploited, and this was valued at the time of the taking, April 27, 1906, on the 40 cent basis, at $3,840,000, the total claim therefor being $4,800,000.

The prescribed method of procedure limited the claimant to testimony as to the amount of damage and the basis on which it was calculated, leaving the contestant, the city, full opportunity for cross-examination as to any detail. This resulted in giving the testimony a wide range, covering the technical and practical features of ore deposits, ore mining, ore treatment and of transportation, comprised in the voluminous record above referred to.

There was no contention as to the deposit being of large volume, or that the ore was magnetic, most of which required treatment to make it of commercial value, but the witnesses for the city questioned the average width, the quantity of available ore, its average analyses, the cost of mining, of concentrating and of freights, and suggested alternate means of overcoming the loss of mill site, dumping grounds, railroad connections, etc. Each feature received full consideration, as will be apparent from the list of those who gave expert testimony and the time occupied in the hearings.

The canal connecting the East Branch of the Croton River with the new storage reservoir crosses the northern portion of the property of the Croton Magnetic Iron Mines, cutting the extension of the main ore deposit at an acute angle, and this, together with the adjacent property which the city sequestered, segregated a part of the northern portion of the deposit, rendering it, according to the claimant, valueless, as it could not be worked to advantage. The city of New York stated that owing to the dip the deposit evidently extended to great depth into territory not taken by the Aqueduct Commission and that this isolated portion could be mined by levels at considerable depth which would be on the uncondemned property to the east.

The Witnesses

The Croton Magnetic Iron Mines called as witnesses to sustain Birkinbine and Kunhardt the authors thereof and the following: William S. Harvey, Charles Vivian, Sam Tate, A. E. Lehman, S. W. Traylor, Henry H. Hindshaw, Geo. C. Davis, P. deP. Ricketts, E. Gybbon Spilsbury, James Arthur, Josef Westessen, C. G. Buchanan, Samuel Brownsell, August Hecksher, James W. Peale, John Moody.

The city of New York offered testimony: James F. Kemp, Francis May Simonds, F. S. Cook, Michael R. Conley, Owen J. Conley, Don H. Bacon, Frederick A. Canfield, Charles Page Perin, George D. Harrington, Richard Dougherty, Gerard VanTassel, Henry James Lamborn, Robert H. Richards, J. Parke Channing, Martin S. Decker. In addition witnesses were called to prove real estate values, surveys, transfers, etc.

Quality of Ore

To test the character, size and depth of the ore deposit in the sequestered portion of the property, the claimant sank ten vertical bore holes varying in depth from 65 ft. to nearly 600 ft., the cores of which were preserved, sampled and analyzed; these ten holes showed the cores to vary from ore carrying iron over 60 per cent. to barren rock. By the bore holes the claimant demonstrated the continuance of the ore deposit upon the tract sequestered and that its general character and width apparently corresponded with the portion to the south where mining operations had been carried on, while its depth was attested by the deepest bore hole.

It was asserted by counsel for the city that to show the true character of the ore the bore holes should have been run at right angles to the dip of the deposit and not perpendicularly from the surface.

Witnesses for the city of New York also claimed that in estimating the quantity of ore only "ore in sight" should be considered, which was defined as ore exposed on three sides by excavations not too far apart. On this assumption the city's experts figured that there was no "ore in sight" on the property sequestered, that on the residue there was slightly over 1,160,000 tons of ore blocked out, and in actual mining this amount could not be obtained.

The Birkinbine and the Kunhardt report on the mine stated that the deposit had been thoroughly sampled, all of the workings having been examined, and samples secured either by chipping pieces from the walls at intervals of 2 to 3 ft. or by firing small blasts and taking about 30 lb. for a sample. By the first method 198 samples were taken, representing some 9,900 testing points, and in addition 390 holes were drilled and fired to obtain 190 shot samples, the recorded weight of samples taken from the mine being five net tons. These samples were quartered down and 388 analyses made. Owing to the irregular character of the deposit this was deemed the best plan to pursue, giving a general average analysis of 37 per cent. after discarding one-third of the workable ground as too lean or barren to be profitably treated.

The city contended that as the personal factor entered into the above it is not the proper method of sampling, but that channels should be cut at regular intervals of 50 ft. at right angles to the strike and entirely across the width of the deposit. On cross-examination it was admitted that this method approved by the city had been imperfectly followed by its experts.

The channel samples collected for the city were analyzed and a distinction made between "total" and "available" iron, the latter being the percentage of iron in the ore after the non-magnetic portion is removed, which it was claimed would be the case in concentration. The city reported 87 samples weighing 2,190 lb. from which were made analyses showing total iron from 5.17 to 52.19 per cent. and available iron from 4.56 to 50.59 per cent. The differences in the two methods of stating the percentage of iron ranged from a fraction of 1 per cent. to almost 4 per cent. Using the "available" ore only, the city's testimony was that the average analysis of the ore, according to its sampling, was 33.41 per cent. of iron. Only the Theall tunnel workings were sampled, and no ore which analyzed less than 27 per cent. of iron was considered, the claim being made that because roof samples opposite the rooms were richer than those between the rooms, an arbitrary reduction of 10 per cent. was made, leaving the average iron in the ore 30.06 per cent. As some wall rock will fall and mix with the ore, this average was further diminished 4 per cent. on that account., and still further reduced because it was claimed that 200,000 tons of the richest ore had been removed, which would affect the value of the remaining. The city of New York therefore fixed the average per cent. of iron as 29.5 per cent.

Testimony as to Costs

In testifying as to the costs of mining, milling, concentrating and freight rates there was much diversity of opinion, and many different methods were used in arriving at the expense of preparing a ton of nodules or concentrates and delivering them at furnaces within a radius of 150 miles. Briefly, these may be summarized as follows, the witnesses being grouped for the claimant and the city:

FOR THE CLAIMANT.

John Birkinbine estimated that in mining one cubic yard of material two tons of ore, averaging 37 per cent. of iron, would be obtained, the balance going to waste dumps; that the cost of mining, milling and nodulizing (2.3 tons of ore being required per ton of concentrates) would be $3.27 per ton; that a fair freight rate to furnaces is $1.50; a total of $4.77 per ton of 65 per cent. nodules delivered at furnaces, which at 9 cents per unit of iron would be worth $5.85. He placed the royalty at 25 cents per ton and the working profit 15 cents per ton.

Wm. S. Harvey based his estimate on the report of Birkinbine and Kunhardt and valued the ore in the ground at 40 cents per ton, and in addition 23 cents a ton profit in mining.

Charles Vivian, who had mined the Croton ore, said that he could move the material for $1 per cu. yd., or, if he included a profit to himself, for 45 cents per ton.

Sam Tate placed the cost of mining at 66 cents per ton, including waste material. Above ground the cost would be $1 per cu. yd., at 155-ft. level $1.25 and at 255-ft. level $2 per cu. yd.

Henry Hindshaw estimated the cost of mining at $1

per cu. yd. or 50 cents per ton open cut and from 70 to 75 cents per ton for underground mining. Crushing and concentration would cost 16 to 19 cents per ton.

P. deP. Ricketts estimated that, on the basis of 40 per cent. of iron in the ore, mining two tons would cost $1.50, crushing and concentrating 30 cents, nodulizing 65 cents, freight $1.50, shrinkage 10 cents, or a total of $4.05, per ton of nodules worth $6.50 per ton, leaving $2.45 per ton profit, which divided by two tons would give $1.22 less 50 cents for commission, profit, etc., 72 cents, and with a deduction for contingencies he calculated a royalty of 45 cents per ton in estimating the value of the Croton mines property.

James Arthur stated that the total cost of labor to break down 2,400 tons of ore in 24 hours would be $259.05 daily, and in addition management would cost $740 per month. This did not include surface work.

E. Gybbon Spilsbury estimated the cost for mining, milling and interest on capital at 64.8 cents per ton. Assuming 3½ tons were mined to produce one ton of 65 per cent. concentrates, this would cost $2.268. A ton of nodules is worth $6.50 at furnaces, deducting 1 cent per unit for expenses of nodulizing leaves $5.85 per ton of concentrates allowing freight and handling $1.625 per ton would bring this to $4.225 per ton, showing a profit of $1.957 per ton of concentrates, which divided by 3½ tons equals 56 cents per ton profit for the crude ore.

August Hecksher testified that nodules would be produced carrying 62 to 64 per cent. of iron, with sulphur not over 0.15 per cent., based on 2¼ tons of crude being required per ton of concentrates. He gave the following expenditures: Mining $1.37, milling 77 cents, general expenses 18 cents, or $2.32 per ton of concentrates. The cost of nodulizing, 60 cents per ton, did not include interest or amortization, and he allowed 10 per cent. of the capital (estimated $700,000) for this purpose. The nodules would be worth 10 cents per unit delivered, and the freight rate would be $1 per ton. The fluctuations in price of nodules was 8 to 11 cents per unit.

S. W. Traylor estimated that with a 1,200-ton mill, making 2,400 tons in 24 hours, the cost to crush, mill and concentrate would be 30 cents per ton.

C. G. Buchanan testified that crushing and concentrating would cost 15 cents per ton, or 30 cents per ton of concentrates. He also testified that in magnetically cobbing the Croton ore one-third was rejected, the balance averaging 39 per cent. of iron.

FOR THE CITY.

For the city of New York F. M. Simonds estimated that 2.74 tons of 29.5 per cent. ore would be required to make a ton of 60 per cent. concentrate, and for this estimated that the mining underground would cost $3.23, milling $1.18, nodulizing 83 cents, freight $2, selling expenses 40 cents, or a total of $7.34 per ton, and, by valuing nodules at $4.20 per ton, showed a loss of 3.14, or $1.15 per ton of crude ore. If the ore was mined open cut mining would cost $1.97 per ton, the other figures remaining the same, and there would be a loss of $1.88 per ton of nodules, or 69 cents per ton of crude ore.

James F. Kemp considered that the Croton mine was abandoned and had no value.

Don H. Bacon assumed that the ore carried 25 per cent. of iron, and on this basis it would cost $1.25 per ton for mining or for 10 tons $12.50; 10 per cent. iron would be lost in tails, leaving 225 units of iron, which would supply 3.63 tons of 62 per cent. ore. He gave the cost of concentrating 10 tons of crude ore, at 70 cents, $7; cintering 3.63 tons, at 70 cents, $2.54; for selling 3.63 tons, 36 cents; freight, at $1.50 on 3.63 tons, $5.44, a total of $27.84, which divided by 3.63 gave the cost per ton of concentrates at furnaces $7.67, or 12.3 cents per unit. Nodules he estimated at 7 cents per unit, thus showing a loss per ton of nodules of $3.29.

Frederick A Canfield took John Birkinbine's estimate that one-third of the material would be discarded and on that basis testified that to produce a ton of concentrates there would be required 2.47 tons of 37 per cent. ore, of which the cost for mining would be $3.62, milling and concentrating (at 70 cents per ton) $1.73, nodulizing 65 cents, sinking fund or amortization 37 cents, freight $2, commission 10 cents, contingencies 10 cents, making a total cost for the nodules delivered at furnaces $8.57 per ton, or 13.18 cents per unit. He though these nodules were worth about 7 cents per unit.

Charles Page Perin stated that the quality of the ore was so poor, using the city's estimate of 29.5 per cent. of iron, that the deposit had no value as a mine, as it would cost $7 per ton to make and deliver a ton of 55 per cent. concentrates, assuming a freight rate of $1.50 per ton.

J. Parke Channing estimated the cost of mining at 90 cents to 1.10 per gross ton, not including amortization. This was based on mining 1,000 tons per day, but if 2,400 tons was won the cost would be reduced to 70 to 90 cents per ton.

Owen J. Conley thought that 2.74 tons of ore would be required per ton of concentrates, which would cost for underground mining, at $1.2268 per ton, $3.3614 transportation, at 1 cent per ton from mine to mill, 0.0274; milling, per ton, at 0.42465 = $1.1635, a total of $4.55. In the open cut work mining would cost 64.2 cents per ton, the other items remaining the same, and the cost per ton of concentrates would be $2.92. None of his figures included nodulizing, freight or commission.

Henry James Lamborn assumed a basis of 30 per cent. of iron in the ore, estimating the cost of open cut mining at 75 cents and concentrating 40.3 cents, and stated that 2.404 tons would be required to make a ton of 56 per cent. concentrates, which would cost $2.77. Underground mining would cost $1.28 per ton, making the cost per ton of concentrates $4.05 per ton. If 65 per cent. concentrates were made the concentrating would cost 53.5 cents per ton and 2.94 tons of crude ore would be required, making the cost of underground concentrates $5.34 and open cut $3.78 per ton. Valuing the concentrates at 7½ cents per unit, and using a freight rate of $2, this would show a loss of $1.47 per ton open cut and $1.75 underground for 56 per cent. concentrates, and for 65 per cent. concentrates losses of $1.80 and $3.38 per ton respectively.

Robert H. Richards estimated the cost of milling and concentrating per ton of crude ore reduced to 12 mesh at 66 cents per ton, and if recrushed to 30 mesh at 87 cents per ton of crude ore.

Testimony was also offered as to the number of men required to mine a given quantity of ore, as to cost and amount of explosives required, expenditures for sinking shafts, erecting concentrating and milling machinery, water supply, overhead tramways, railroad connections, geological formation, methods of analyses, leases paid elsewhere for iron ores, etc.

The litigation resulted in a finding by the commissioners which restored to the Croton Magnetic Mines most of the property taken, the city of New York accepting an easement for the portion occupied by the diversion canal. The mining company is also assured a new right of way for railroad switch and necessary water supply. A relatively small cash payment is also made to the mining company, and the city of New York assumes the cost of legal proceedings.

Iron Ore Production in 1910

The United States Geological Survey has given out the preliminary figures for iron ore production in the United States in 1910, the total being 56,889,734 gross tons, as compared with 51,155,437 tons in 1909 [the Survey report for 1909 gave the total as 51,294,271 tons], an increase of 5,734,297 tons or 11.21 per cent. The figures include only iron ore used in blast furnaces, and not that used for fluxing precious metals in Montana, Nevada, New Mexico and Wyoming, or that used in the manufacture of metallic paint. The value of the production in 1910 was $140,135,607, against $109,964,903 in 1909.

The Cochran Pipe Wrench Mfg. Company, Seventy-eighth street and Woodlawn avenue, Chicago, is adding to its line three more sizes of wrenches. These sizes are 6, 8 and 36-in. The company has heretofore made 10, 14, 18 and 24-in.

The Dahlstrom Metallic Door Company and the Crown Metal Mfg. Company, both of Jamestown, N. Y., have opened joint offices in Pittsburgh, at 2435 Oliver Building, in charge of L. H. Gibson.

Laws for Accident Prevention

A survey of laws for the safety of workers in factories is summarized in the June issue of the American Labor Legislation Review, and an editorial reference to the laws is made in the same issue by Leonard W. Hatch, chief statistician of the New York State Department of Labor. Elaborate tables have been compiled covering the features of the laws of the different states in relation to comfort, health, safety and cleanliness in factories. The following comments from Mr. Hatch's article are of interest, particularly as pointing out the need of uniform laws.

Mr. Hatch asks why, if New York, the first State in manufactures, finds in common with many others that "machinery of every description" needs to be brought within the requirements for guards, Massachusetts, third in value of manufactured products, does not seem to find it necessary to require guards for more than "belting, shafting, gearing and drums." While the dangers to be guarded against by factory laws are largely general and uniform wherever there are manufacturing industries, there is nothing like uniform recognition of these dangers in different states. Factory laws for safety do not bear any general evidence of having been formulated on the basis of careful study of the dangers with which they deal.

Continuing Mr. Hatch says: In reading through the provisions with regard to safeguarding machinery, one is struck by the very general terms of the requirements in many states, and that such requirements really do nothing more than prescribe generally that all machinery shall be properly guarded, without discriminating any different classes of machine dangers, and, still more, without prescribing any specific kinds of safeguards. In a word, often the law contains only a requirement of safety rather than specific *means* of safety. In this respect there is a general contrast between provisions regarding machinery and those for the other classes of dangers distinguished above. Thus, in the case of shafts and openings, and of stairways, the laws commonly prescribe the specific safeguard, that is, inclosure, handrails or rubber treads. A still better illustration is the requirement of belt shifters and loose pulleys. Instead of prescribing that the starting and stopping of machinery shall be properly guarded, this requirement names the specific means of making those operations safe. But aside from this specification as to starting and stopping machines, and the specific prohibition of cleaning machinery in motion (usually for minors or women), the most common provision for the great danger field of power-driven machinery, the principal and most characteristic source of factory accidents in modern times, is a single declaration in general terms that such machinery "shall be guarded."

Southern Iron Consolidations

It is now stated that the negotiations in progress for some months for the merger of the Alabama Consolidated Coal & Iron Company with the Southern Iron & Steel Company will be completed in the next two weeks. Terms have been agreed upon which are satisfactory to the directors of the Alabama Consolidated Company and to the larger interests in the Southern Iron & Steel Company. The new corporation will be known as the Alabama Iron & Steel Company. The total capitalization will be $28,000,000, as against $33,000,000 for the two companies at present. Underlying the new issues of bonds will be $1,800,000 bonds of the Southern Iron & Steel Company and $2,200,000 bonds of the Alabama Consolidated Coal & Iron Company.

The report of a deal pending between the Woodward Iron Company, Woodward, Ala., and the Central Coal & Iron Company for the acquisition of the Holt, Ala., blast furnace and other properties of the latter company is authoritatively denied. The Central Coal & Iron Company is an affiliated interest of the Central Foundry Company, which for some time has been in the hands of a receiver.

A method of printing by sound has been patented by Arthur C. Ferguson, Brooklyn, N. Y. It appears to comprehend a mechanism for recording sound waves as transmitted for example over the telephone, characters being printed on a printing sheet carried on the drum. The patent was granted August 8 and was assigned in part to Lyman C. Smith, Syracuse, N. Y.

The Hopkins & Allen Arms Company

The Hopkins & Allen Arms Company, Norwich, Conn., having a capital of $300,000, and assets of upward of $670,000, has just been turned over to a local syndicate which contemplates the enlargement of the business and the adoption of the latest improvements and devices in the manufacture of arms. The syndicate secured practically all of the stock through purchase by the W. T. Fields Company, broker and investment dealer, New Haven, Conn. The Thames National Bank of Norwich was designated as a depository for such stock as might be offered and the Union & New Haven Trust Company as a depository for the funds necessary to make the purchase. The syndicate formed by the W. T. Fields Company is composed of successful business men and manufacturers, a number of whom have had valuable experience in the manufacture of firearms and it is expected that they will take up the active management of the company, insuring a material increase in the output while largely reducing the cost of production.

The Hopkins & Allen Arms Company, organized in 1868, has been controlled by a number of the leading citizens of Norwich and has been in active operation since that time. The business, which at first amounted to $250,000 annually, has gradually increased so that the output of manufactured goods in 1910 amounted to $650,000, and will be larger this year. It is understood that the company's products, which have attained a reputation for excellence and a world-wide market, will be on the same lines as heretofore, although the standard of workmanship will be of higher grade. The result of this purchase and transfer is expected to be of great advantage to the city of Norwich, as, with new, progressive and skillful management, the company, having on its payroll upward of 500 employees, will become a much more important factor in the manufacturing industries of the city.

British Iron and Steel Exports and Imports

In the seven months ending with July the exports of iron and steel from Great Britain were 2,673,436 gross tons against 2,797,009 tons in the first seven months of 1910. The values were £25,637,000 and £25,210,000 respectively. The July total fell 100,000 tons short of that for July, 1910, being 325,688 tons against 426,370 tons.

The imports of iron and steel products for the first seven months of this year were 1,059,173 tons against 782,218 tons in the corresponding period of 1910. The July returns showed that increases over the corresponding months of 1910 continue, the total being 127,827 tons against 102,010 tons in July, 1910. Semi-finished steel showed a noteworthy increase. The total of blooms, billets, slabs and sheet bars imported in July was 49,800 tons against 31,400 tons in July, 1910. British rail exports continue to fall off. They were 30,945 tons in July, against 43,779 tons in July, 1910. For the seven-month periods in the two years they were 216,000 and 266,000 tons respectively.

New House Organ.—The United States Radiator Corporation, Detroit, Mich., has recently issued a new house organ entitled "Radiation." This will be issued occasionally and will be devoted to the subject which gives the periodical its name. The initial number contains an article on "Setting the Sun to Work," which deals with the various types of solar motors which have been developed. The first installment of a series of articles on heating buildings with steam appears in this number, together with a brief description of the heating plant of the Ritz-Carlton Hotel in New York City. Installments of two other articles, one dealing with the "Story of the Match" and the other with "Fuel and Draft," complete the periodical.

Panama Railroad Requirements.—The Panama Canal Record says that a requisition has been made for the following materials for use on the relocation of the Panama railroad: Two thousand gross tons of 90-lb. open hearth steel rails; 8000 pairs of 4-hole splice bars; 1000 extra special track bolts; 160,000 Economy No. 9 rolled steel 4-hole tie plates; 400,000 screw spikes, 5 in. long under flange, and 7-8 in. diameter; 800 special joint tie plates; 17,000 special joint screw spikes, 5 15-16 in. long.

The Sintering of Fine Iron-Bearing Materials*

The Use of the Dwight-Lloyd Process in Preparing Flue Dust and Concentrates for the Blast Furnace

BY JAMES GAYLEY

[The following paper, which is reprinted from the Bulletin of the American Institute of Mining Engineers for August, 1911, was prepared by Mr. Gayley for the Wilkes-Barre, Pa., meeting of the Institute. The process of Dwight and Lloyd (Arthur S. Dwight, 25 Broad street, New York) has been in use for several years in the sintering of lead and copper sulphide concentrates. The American Ore Reclamation Company, 71 Broadway, New York, has secured the rights to use the process on iron-bearing materials and is constructing a plant at the blast furnaces of the E. & G. Brooke Iron Company, Birdsboro, Pa., for the treatment of flue dust. It will be in operation in September.—EDITOR.]

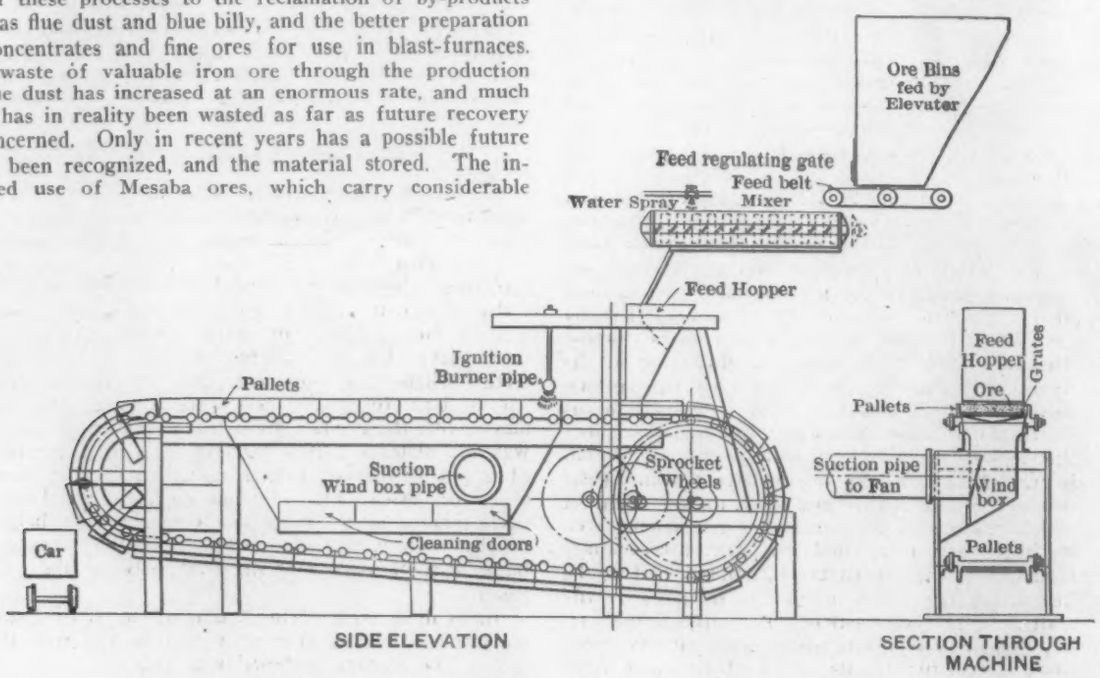
The paper presented to the Institute in 1910, by H. O. Hofman, on "Recent Progress in Blast Roasting,"* has called the attention of the iron industry to the adaptability of these processes to the reclamation of by-products such as flue dust and blue billy, and the better preparation of concentrates and fine ores for use in blast-furnaces. The waste of valuable iron ore through the production of flue dust has increased at an enormous rate, and much of it has in reality been wasted as far as future recovery is concerned. Only in recent years has a possible future value been recognized, and the material stored. The increased use of Mesaba ores, which carry considerable fine ore, is principally responsible for the great increase in the production of flue dust. The amount of fine material that is carried over depends on the fineness of the material and the velocity of the gases, and also to a very great extent on the regularity or irregularity of the working of the furnace. Attempts to recover a part of this loss have been made by recharging a portion of the production into the furnace; but as this material has been once carried out from the furnace, it is naturally in good shape to be carried out again. A recent practice at some works is to soak the flue dust thoroughly with water to give it more cohesiveness; but by many this is considered of doubtful advantage in the furnace, and the gases are in consequence heavily laden with moisture.

There are vast deposits of magnetic iron ores in the United States and Canada that are too low in iron for use at the present time, but which can be economically concentrated into very rich material; in many cases the fineness of crushing necessary to secure proper concentration has prevented their use except in extremely limited quantities. The reclamation of these ore bodies will add tremendously to the ore reserves of the United States, and this can best be done by a simple and efficient method of sintering.

*Transactions American Institute of Mining Engineers, xii, p. 739 (1911).

Construction of the Machine

Attention was directed especially to the Dwight and Lloyd system of sintering fine material in thin layers by internal combustion as promising to solve this problem most efficiently. The Dwight and Lloyd patents cover most of the simple forms of apparatus by which their process can conveniently be carried out, but the one that has given the best satisfaction in practice and has now been adopted as the standard is known as "Type E," or the "straight-line-conveyor type" described by Hofman. As shown in the illustration, the machine consists essentially of a frame of structural steel supporting a sheet iron suction box, open at the top, over which may be pushed a train of conveyor elements called "pallets," each of which has a floor composed of ordinary herring-bone grates, and which slides on its planed bottom, making an air-tight joint with the horizontal top edges of the suction box on which it rests. The vertical surfaces of contact of the pallets with each other are also accurately planed, so that all joints are closed air tight when the train of pallets is being pushed along.



Dwight and Lloyd Sintering Machine, Conveyor Type.

An exhaust fan, connected with the suction box by suitable piping, induces air-currents to travel downward through the openings in the pallet grates and through the permeable material resting upon them. To trap the air properly, a smooth-surfaced dead plate, somewhat longer than one pallet length, is bolted to each end of the suction box.

The movement of the train of pallets is accomplished by a pair of cast steel sprocket wheels, which serve the double purpose of lifting the pallets from the lower level and pushing them horizontally across the suction box. Each pallet is provided with four small roller wheels which hang idle while the pallet is traveling over the suction box, but serve to carry the pallet on its return trip to the point of beginning. The return of the pallets is provided for by a pair of semicircular discharge guides, terminating in a lower trackway sloping downward to the base of the main sprocket wheels, and continuing as semicircular guides around their peripheries. The pallets when they complete their journey across the suction box to the point of discharge have their wheels engaged

by the curved guides, and when pushed still further, beyond the crest of the curve, break away from the train that is pushing them, and one by one drop with a sharp blow on the upturned edge of the pallet just preceding. This shock serves to dislodge the cake of sinter from the surface of the grates, which now stand more or less vertical. The train of discharged pallets, in the guides and on the inclined lower trackway, crowds down by its own weight to the foot of the main sprocket-wheel. During this period of their travel, the pallets are upside down, which automatically tends to clean out the grate-slots. The sprocket-wheel lifts the train of pallets to the upper level and the cycle is completed.

We thus have a practically endless conveyor, any individual element of which can be removed for repairs and a new one substituted without stopping. The circuit may, if desired, be made a closed one, and this arrangement has been used under special conditions; but, in general, it is customary to leave an interval in the train of about one and a half pallet lengths, which gives just about the right amount of shock.

The speed of horizontal travel of the pallets is adjustable to meet varying requirements, with the usual range from 7 to 30 in. of linear travel per minute.

Ore-Charging and Sintering

The ore charge is automatically fed to the pallets in a thin layer (from 4 to 6 in. thick) from a simple funnel-shaped hopper of the same width as the pallets, hung directly over them at a point between the main sprocket wheels and the suction box. There being no bottom to the hopper, the material rests directly on the pallets and is dragged out by their movement, the front edge of the hopper acting as a scraper to form a uniform layer of the proper thickness.

The stream of ore emerging from the hopper passes under an igniting device which kindles the combustible elements in the charge on its top surface, and the combustion thus started is carried downward through the mass by the air currents while the material is passing over the suction box. This ignition can be accomplished by almost any kind of flame that will give a quick, intense heat. The amount of heat required at this point of the operation is exceedingly small and the cost of ignition correspondingly low. The wide variety of suitable means makes it possible to meet almost any local requirements.

The complete cycle of operations is as follows: A pallet being pushed outward tangentially from the top of the sprocket wheels, passes under the feed hopper, where it takes its load of ore in the form of a continuous, even layer of charge, say 4 in. thick. It next passes under the ignition, where the top surface is ignited, and at the same time the charge comes within the influence of the down draft induced by the exhaust fan through the suction box. The air currents promote rapid internal combustion of the fuel ingredients in the charge, and carry the action progressively downward from the top surface until it reaches the grates. This internally developed heat and the chemical reactions resulting, serve to bind the mass together until it becomes a coherent cake of cellular material, much resembling coke. The speed of the machine should be regulated so that the combustion and sintering operation is complete when a given pallet has reached the far end of the suction box, where the cake is discharged by the pallet dropping into the discharge guides and striking the one just preceding it. The empty pallets then gradually crowd back to the face of the sprocket wheels, are slowly raised to the upper track, take their load and make a new trip.

Power Requirements and Repairs

This type of machine is now made in two standard sizes, one having a suction box 30 in. wide by 150 in. long and a nominal rated capacity of 50 tons per day; and the other with two suction boxes in tandem, having a width of 42 in. and an aggregate length of 264 in., and having a nominal rated tonnage of 100 tons per day on average material. The area of the suction box is the measure of the capacity of the machine, and the suction fan must be so proportioned as to maintain a vacuum of about 6 oz., when handling approximately 4,000 cut. ft. of gases per minute, this being the average volume from each 100-ton unit. Such a fan, with short and straight pipes and running at about 850 rev. per min., requires from 25 to 35 hp. The sintering machine itself consumes about 1.5 hp., but 10 hp. is usually allowed for machine, conveyors, feeds, and mixers—in fact, everything except the fan.

Each sintering unit is self-contained and occupies space approximately as follows: 30 by 150 in. machine (so called 50-ton unit):

Length over all, 27 ft.
Width .. .. .. 7 ft.
Height of top of hopper above foundation, 11 ft. 4 in.
Units in battery may be set with 11-ft. centers.
Weight of complete machine, approximately 16 tons.

42 by 264-in. machine (so called 100-ton unit):

Length over all, 40 ft. 8 in.
Weight .. .. .. 7 ft. 6 in.
Height of top of hopper above foundation, 13 ft. 9.5 in.
Units in battery may be set with centers 12 to 14 ft. apart.
Weight of complete machine, approximately 26 tons.

The grates are of the simple herring-bone pattern and are made of cast-iron. There should be very little breakage. The heat developed in the operation being internal to the ore mass, does not cause the pallets to become very hot, and there is but little damage from this source. Moreover, on account of the extremely slow movement of the mechanism, the wear and tear is very small. In one plant which was in steady operation for two years the average cost of supplies and repairs was from 2 to 4 cents per ton; 5 cents per ton will easily cover all ordinary contingencies. In many ways the excellence of this particular type of mechanism has been thoroughly demonstrated, and it may now be confidently stated that it is a simple, efficient, and workmanlike device for carrying out this special purpose, and can be adapted to almost any location.

Results with Flue Dust and Fine Ores

A number of iron bearing materials, of different kinds, were treated on this machine, and in each case with satisfactory results. Among them were two shipments of iron flue dust, which were widely different as to physical condition. One was the usual character of flue dust, which I shall designate as No. 1, while the other, No. 2, was extremely fine, 50 per cent. of it passing through a 100-mesh sieve; but the sintered product of each was not distinguishable, and both were ideal in size and structure for the blast furnace. There were no large and compact masses like the product from the briquetting process, nor was the material rolled together in balls from the size of a pea to that of a cannon ball, as in the revolving kiln; but, instead, the individual pieces were cellular, like open pumice stone or porous cinder, which helps materially towards economic reduction in the furnace, as a large area of contact is provided between the ore and gases.

In Schinz's book, "The Action of the Blast Furnace," published in 1871, a chapter is devoted to "area of contact." The opening sentence is as follows:

> A chemical action can only take place between two bodies, however great their affinity, if they are in intimate contact with each other, and the rapidity of this action will be so much greater, the more numerous the points of contact are.

In the Dwight and Lloyd method of sintering with a bed of material that is not disturbed or agitated during the sintering operation, the sintered product is all so cellular that a large "area of contact" is provided; and its reducibility is very great compared with the more massive agglomerated products, just as coke, by reason of its cellular spaces, burns more readily than anthracite coal, which can have only a superficial combustion. Although the product from the Dwight and Lloyd furnace in sintering flue dust is of a desirable size for blast furnace use, yet a fair proportion of the product would be suitable for use in the open hearth furnace.

In sintering materials which do not contain any heat producing substances, recourse can be had to the practice of the ancient Catalan or Corsican process, where carbon fuel was mixed with the ore, and which, in its first stage, was an agglutinizing process. In order to test the machine on this class of work, some magnetic concentrates were treated, after being mixed with 7 per cent. of coal, and the product was found to be satisfactory in every particular. The material was sintered into a coherent mass, but so open and cellular in structure that the mass, in discharging from the pallets, broke into very convenient sizes for the furnace, and without any fines. As the

mixture contained less carbon than the flue dust, it was sintered much more quickly. While in the test on flue dust, a travel of 12 ft. in the grate movement was required to complete the sintering, the concentrates were completed in a travel of 6 ft. This represents, in the treatment of magnetic concentrates, a greatly increased capacity for the machine.

Some Cuban (Mayari) iron ore was also treated on the machine after being mixed with 7.5 per cent. of coal and coke in alternate tests, and afterwards the ore was mixed with 10 per cent. of coal in one test and 10 per cent. of coke in another; but the use of 10 per cent. of fuel did not show any advantage over 7.5 per cent., nor were the results from coke any better than from coal. The sintered product resembled closely that obtained from the flue dust; there was very little fine material, and in fact no fines that would require retreatment. The sintered material was irregular in shape, with an average size of a hickory nut.

Analysis of Fine Material Treated

The following are analyses of the material treated:

Sample.	Fe Per Cent.	P Per Cent.	Mn. Per Cent.	SiO_2 Per Cent.	Al_2O_3 Per cent.	CaO. Per Cent.	MgO Per Cent.	Carbon Per Cent.
No. 1. Flue-dust	46.06	0.194	0.54	9.68	3.00	1.80	0.80	17.00
Sintered product	57.90	0.260	0.66	12.30	3.95	2.00	1.20	0.60
No. 2 Flue-dust	46.43	0.123	0.60	9.88	1.72	2.00	1.44	13.75
Sintered product	58.84	0.150	0.75	11.81	3.05	2.50	1.71	2.10
Magnetic Concentrates	57.52	0.090	0.56	9.70	3.43	0.35	0.10	0.00
Sintered product	59.65	0.110	0.60	10.60	4.00	0.30	0.10	0.00

Sulphur.

	Per Cent.
Magnetic concentrates with 7 per cent. of coal	1.17
Sintered concentrates	0.0006

Sieve-Test.

Sieve.	No. 1. Flue-Dust, Per Cent.	No. 2. Flue-Dust, Per Cent.	Magnetic Concentrates. Per Cent.
On 10-mesh	14.0	4.0	28.0
On 20-mesh	31.0	1.0	44.0
On 40-mesh	31.0	6.0	15.0
On 60-mesh	14.0	4.0	7.0
On 80-mesh	3.0	15.0	2.0
On 100-mesh	3.0	20.0	1.0
Through 100-mesh	4.0	50.0	3.0

	Ferrous Iron. Per Cent.	Ferric Iron. Per Cent.	Total Iron. Per Cent.
Cuban (Mayari) ore (dried at 212°)	0.63	47.80	48.43
Sintered product	9.67	44.30	53.97

Sieve-Test, Mayari Ore, Sintered.

	Per Cent.
On 2-mesh	53.88
On 4-mesh	16.33
On 8-mesh	23.35
On 20-mesh	4.33
On 40-mesh	1.12
On 60-mesh	0.51
On 80-mesh	0.02
On 100-mesh	0.14
Through 100-mesh	0.32

The physical structure of the sintered product varies under different conditions. Where there is a large amount of moisture and carbonaceous matter present, a corresponding shrinkage within the mass must take place as the volatile constituents are driven out, and this may cause the cake of sinter as a whole to break up into irregular shaped masses or fingers. The smallest of these pieces, however, have a cellular structure like popcorn, which is peculiarly desirable for the blast furnace. In the case of magnetite concentrates, where there is less internal shrinkage, the sinter comes off in slabs having an open structure.

The Cuban ore being the finest, the sinter was of a smaller average size than the magnetic concentrates, which were coarser and did not shrink so much in sintering. The flue dust being coarser than the Cuban ore produced a sinter about midway in size between the flue dust and the concentrates. The cohesiveness of the material is inversely as the amount of internal shrinking of the mass during sintering.

Advantages of the Process

Among the advantages observed in the Dwight and Lloyd process, the following may be noted:

1. The feeding of material to and discharge from the machine, without interfering with the continuity of the process.

2. The down-draft of air exerts pressure in the direction of the gravity of the mass, and prevents the displacement of particles.

3. The down draft of air intensifies the combustion at the beginning of the sintering, and towards the end of it operates efficiently to cool the mass.

4. The sintering operation is under constant observation during the whole period, and permits of rapid changes in adjustment.

5. The process can be stopped at any time to make any changes without interfering with or clogging any part of the apparatus.

6. The duration and activity of treatment are subject to ready control.

7. The adjustability of the process makes it adaptable to treating any class of fine material, without modifying the construction.

8. The withdrawing of the gases by a fan provides a heating medium for drying ores carrying a surplus of moisture.

9. There is no nodulizing of the sintered material, and the cellular structure, which is so important, is preserved.

10. The product is ideal in structure for use in the blast furnace, on account of the large "area of contact" provided, and its adaptability in size for distribution in and passage through the furnace.

Value of the Sintering Process

With the large productive capacity that has been built up in the iron and steel industry in the United States, matters of economy in production are now engaging the attention of the industry to a much greater extent than in the past. The most promising field for effecting economies therein, is in the manufacture of the basic metal—pig iron; here several avenues are still open for effecting great reductions in cost. A very important field to operate in is the treatment of the fine ores before being charged into the furnace. Twenty-five years ago the practice of charging large lumps of ore and stone and large pieces of fuel was discontinued, and the crusher came into general use for reducing these materials to a more uniform size, and with beneficial results in the furnace. The increasing use of the Mesaba ores has led to the other extreme in practice, so that the fine ores and the flue dust resulting from their use require an agglomerating process, in order to return to the ideal condition of material as it was "sized" by the crusher.

The use of very fine materials in the blast furnace has not been successfully worked out, and probably never will be in the modern blast furnace, and no time should be lost in adopting efficient and economical methods for treating these materials to make their use successful. The practice of recharging the flue dust as such, is considered by many a questionable one. Some furnace men hold the opinion that while the recharged flue dust is retained in large part in the blast furnace, it is nevertheless detrimental, as it tends to collect on the bosh walls, and causes frequent slips and irregular working. Because so much ore is saved from the waste, it does not follow that it represents a saving in cost of pig iron. The screening of coke to eliminate the fine pieces is certainly beneficial, but it does not seem logical to recharge the same kind of material when intermixed with fine ore, as in flue dust, into the furnace.

The actual amount of objectionable "fines" in the Mesaba ores represents only a small percentage; but its pernicious influence is out of all proportion to the amount involved. At some furnaces in England, where the fine material is screened from the ores and sintered, very beneficial results have been obtained.

When the screening of the fine material from the coke was first advocated, it was objected to by many, as representing a waste of fuel, although of poorer quality, that might have some value in the furnace; but now the economic value of the practice is fully appreciated. The same practice applied to ores, and sintering the fine material to prevent waste promises as great or even greater benefits.

The American Hoist & Mfg. Company, Hamburg, Pa., is making arrangements to move the plant to Lock Haven, Pa., and is now erecting new buildings, which will be completed within 60 days. The company will continue to manufacture a full line of chain hoists.

Specifications for Steel Axles and Shafts

Proposed Standard for Heat Treated Carbon Steel

Specifications for heat-treated carbon steel axles, shafts and similar parts were submitted to the recent annual meeting of the American Society for Testing Materials. They have since been referred to the membership for a letter ballot and are given below. The work of drawing up the specifications constituted a part of the studies of Committee A-1, of the society, William R. Webster, chairman.

1. Steel under this specification shall be made by the open-hearth or other approved process.

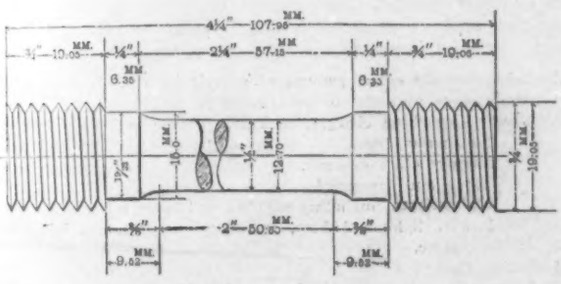
2. A sufficient amount of discard must be made from each ingot to insure freedom from piping and undue segregation.

Chemical Composition

3. The steel shall conform to the following limits in chemical composition:

Carbon	Not over 0.60 per cent.
Manganese	0.40 to 0.80 per cent.
Phosphorus	Not over 0.05 per cent.
Sulphur	Not over 0.05 per cent.

4. Drillings shall be taken from the crop end of one axle, shaft, or similar part from each melt represented,



Dimensions of Test Bar.

parallel to the axis on any radius one-half the distance from the center to circumference, to determine whether the chemical composition of the heat is within the limits specified in Paragraph 3.

In addition to the complete analysis, the purchaser has a right to call for a phosphorus determination, to be made from turnings from each tensile test specimen, and the phosphorus must show within the limits called for by Paragraph 3.

Physical Tests

5. The steel shall conform to the following minimum physical properties:

Ultimate strength, lb. per sq. in.	85,000
Elastic limit, lb. per sq. in.	50,000
Elongation in 2 in. per cent.	22
Reduction of area, per cent.	45

The elastic limit shall be determined by extensometer. Above 40,000 lb. per sq. in., each increment of load shall be not more than 1000 lb. per sq. in.

6. The test specimen as shown by Fig. 1, 0.5-in. diameter and 2-in. gauge length, shall be used to determine the physical properties as specified in Paragraph 5. Tests specimens shall be taken from the crop end of one axle, shaft or similar part, from each treating-plant heat; if more than one open-hearth heat is represented in a treating-plant heat, a test shall be taken from each open-hearth heat represented. A full-size prolongation shall be left on each axle, shaft, or similar part.

7. A cold bend test shall be made from the crop end of one axle, shaft, or similar part, from each treating-plant heat; if more than one open-hearth heat is represented in a treating-plant heat, a test shall be taken from each open-hearth heat represented. The test shall be made with a ½-in. square specimen, not exceeding 6 in. in length, around a flat mandrel with edges of ½-in. radius, and the specimen shall bend, without fracture, 180 deg. around the said mandrel.

8. Specimens for tensile test and cold bend test shall be taken parallel to the axis of the axle or shaft and on any radius one-half the distance from the center to the circumference.

9. In case the physical results obtained from any lot of axles, shafts or similar parts, do not conform to those called for by Paragraphs 5 and 7, the manufacturer shall have the privilege of re-treating such parts, from which new tests shall be taken by the purchaser, and these shall govern the acceptance or rejection of the lot.

Heat Treatment

10. Each axle, shaft, or similar part shall be allowed to cool after forging, shall then be re-heated to the proper temperature, quenched in some medium, allowed to cool, and then re-heated to the proper temperature for ansealing.

11. Warped axles or shafts or similar parts must be straightened hot; that is, at a temperature above 900 deg. F., and before offering the parts for test.

12. All axles, shafts, and similar parts shall be free from cracks, flaws, seams or other injurious imperfections when finished. Those which show such defects while being finished by the purchaser will be rejected and returned to the manufacturer, who must pay return freight.

13. All axles, shafts, and similar parts must be rough-turned with an allowance of ⅛ in. on surface for finishing, except on collar, which is to be left rough forged. Turning must be done on 60 deg. centers with clearance drilled at point.

14. The heat number shall be stamped on the rough forged collar. After rough turning, the manufacturer's name, heat number, individual axle or shaft number, and inspector's mark shall be stamped at place indicated by the purchaser, except at any point between the rough collars.

15. The inspector representing the purchaser shall have free entry, at all times while his contract is being executed, to all portions of the manufacturer's shop which concerns the manufacture of material ordered. All reasonable facilities shall be afforded to the inspector by the manufacturer to satisfy him that the axles, shafts and similar parts are being furnished in accordance with the specifications. All tests and inspection shall be made at the place of manufacture prior to shipment and free of cost to the purchaser. The purchaser shall have the right to make tests to govern the acceptance or rejection in their own test-room, or elsewhere, as may be decided by the purchaser, such test, however, to be made at the expense of the purchaser and to be made prior to the shipment of the material. Unless otherwise arranged, any protest based on such tests must be made within six days, to be valid. Tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the mill.

Sample Book of Abrasive Disks.—To assist a customer in securing exactly the kind of disks he desires the Gardner Machine Company, Beloit, Wis., has brought out a sample book showing the various kinds of material and the different grades of the Gardner extra heavy coated abrasive disks for use on all disk grinders. These samples are mounted on 3 x 5 in. cards and include the two main lines of the company's abrasives for metal grinding, namely, Amalgite and Adamite, together with the garnet paper disks for finishing wood. Each leaf in the sample book contains a specimen of the abrasive measuring 2 in. in diameter together with its name and the special field for which it is best adapted. The company in bringing out this book had in mind the simplifying of orders for disks so that instead of ordering "fifty very coarse emery cloth disks for cast iron" the customer could word his order instead "fifty No. 12 Amalgite B disks" with the result that the manufacturer would know just what grade of abrasive was desired and in addition the purchaser might see just what kind of a disk he would secure. In addition to its factory at Beloit, the company maintains branch offices at Detroit, Cleveland, New York and Boston, where large stocks of all sizes, grades and materials are carried.

The new erecting shop to be built by the Hydraulic Press Mfg. Company, Mount Gilead, Ohio, will be equipped with a 20-ton crane, 40-ft. span and operated with three motors with 220 d. c. current. The building will be so located that a railroad track will run through one end of it, enabling machinery to be loaded into the cars in the shop. The present plant, which occupies a 14-acre site, consists of 13 buildings occupying 100,000 sq. ft. of floor space. The company reports that its business, which was dull the early part of the year, has been very good for the past 60 days, and that it now has the largest volume of orders in its history. The plant is being operated night and day.

Interest Charges and Profit

The Lack of Agreement in Determining Manufacturing Costs—Chart Showing Cost Distribution

A number of examples of a general character to indicate the different attitudes taken with regard to interest charges in determining manufacturing costs and profits is given below. They are taken from a discussion contributed by E. P. Roberts to a paper, entitled "The Design of a Factory System," by A. B. Roberts, presented in the Journal of the Cleveland Engineering Society. Besides the examples a chart is reproduced from the paper, showing at a glance the comparative importance as bearing on cost, of different phases of the work. The reference to this chart in the paper is as follows:

The stores keeper or stock keeper should keep a record of receipts and issues of material, so that a fairly accurate inventory may be taken at any time. From these perpetual inventory records summaries should be prepared periodically, preferably monthly, to show the distribution of all material issued.

From the progress tags daily production reports are prepared by the production or planning department to show the stage of completion reached by every order in the factory.

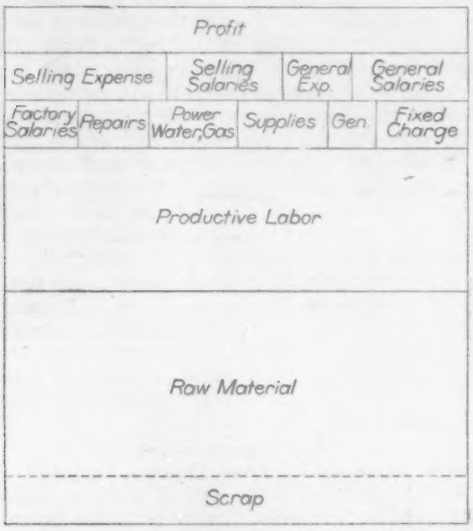


Chart to Show Distribution of Costs.

The timekeeper should prepare summaries showing the pay roll distribution for each pay period.

All summaries should be sent to the cost department, where the data can be assembled to show the cost per shop order or work order, the value of material in process, and the cost of goods shipped.,

The cost department can then make out a report to the accounting department, giving totals only, so that a working balance can be prepared to show the gross and net earnings per month.

From the data thus given a chart can be prepared to show the percentage each item of cost bears to the total cost. It has been found that many accountants can read a chart of the nature of that shown more readily than one employing co-ordinates.

This chart shows which are the largest items of cost and indicates where savings of 1 or 2 per cent. will result in the greatest net saving. It will often happen that the addition of clerical help will effect savings in connection with scrap and other losses that will result in greatly increased profits,

What E. P. Roberts had to say in regard to the paper was, practically in full, as follows:

With reference to the rectangular diagram, the larger rectangle showing total cost and profit, and the smaller rectangles showing cost of various departments, and the upper one profit, it seems to me that it is particularly suited to the bringing out of an important point which is frequently overlooked; that is, the *comparative* importance of various departments as affecting *total* cost. It also shows that quite a large increase in the clerical force is justifiable if it results in only a slight decrease in the percentage of cost in other departments.

Relative to piece system of payment, the author calls attention to the advisability of not changing the rate after it has been established. In my opinion, such action has been one of the principal reasonable arguments that labor organizations have had for objecting to the piece system, or any system of payment other than on the hour basis.

Working Capital and Interest Charges

I consider the author's statement, that interest should not be charged as part of manufacturing cost, correct fundamentally, but owing to the fact that it is frequently done, and some authorities advise it, I think that the point might be elaborated, and also that the place for considering interest be noted.

What is the object of any cash investment?

To obtain interest on the investment.

What amount of cash investment is required for a manufacturing business?

First.—Construction Cost, which is the cost of the plant *placed* in *operation.*

Second.—Working Capital, which is the amount required to conduct the business until such time as the cash returns from goods sold is sufficient to carry on the business, and this capital must be permanently maintained, and in addition thereto, there should be a reserve for contingencies, such as granting unusual credit or failure to collect. Among items requiring working capital are:

A—Labor—usually entire amount of payroll for considerable period.
Material—to a greater or less amount
Factory—overhead charges, such as:
Superintendence.
Factory office expense.
Taxes and insurance.
Maintenance, including supplies and labor for same.
Power, light and heat, including supplies and labor for same.
B—Selling Cost.
C—Advance payments required, or advisable, such as insurance, advertising, etc., discounting bills payable, etc. The items under this heading will really be distributed under A or B.
D—To purchase patents, or other special privileges, which have a lessening value as time passes until at the expiration of a certain period the value is zero.

How may such capital be obtained if a corporation is formed?

First.—The stockholders paying in the entire amount, or—

Second.—By bonding for part of the capital; the balance being obtained by subscription to common stock, or—

Third.—By bonding and obtaining the balance by preferred and common stock.

The cash invested is the same in any case.

How can the financing plan affect cost of manufacturing?

If the manufacturing concern is a firm, or a corporation with stock only issued, and all expenses are paid, cannot it continue in business even if no interest on investment is earned? It can.

Capital Charges and Cost of Manufacturing

If, however, 6 per cent. interest, or any other per cent. is charged as *part of the cost* and on such basis the cost is not earned by an amount equal to interest, which has been charged, has an actual loss been sustained? It has not.

Why not ascertain net profit above actual zero instead of above some higher point—arbitrarily taken.

If a company requires $100,000 capital and can obtain it by selling $125,000 par value of stock at 80, or by selling $50,000 bonds at par and $100,000 stock at 50, does that affect *cost of manufacturing?* Not at all.

If the capital required is $150,000 cash and $100,000 is required for plant cost and $50,000 for working capital, and 6 per cent on $100,000 is charged as part of the manufacturing cost, should not 6 per cent on $50,000 be charged somewhere?

If so, to what shall it be charged?

If a portion of the $50,000 is required to carry customers' accounts and, owing to change in business conditions, instead of having to carry same as long as previously—cash on delivery is obtained, has the manufacturing cost been reduced? Not at all. The cash required in the busi-

ness is less, and, therefore, if the investment be reduced, any amount available for dividends would be a larger percentage.

If the reverse conditions arise and more time has to be given and additional working capital thereby necessitated, has the manufacturing cost increased?

If there are two companies, one manufacturing and one selling, which one would benefit, or lose, by the conditions stated above?

Ex: If $150,000 is required—
$100,000 for plant,
$ 50,000 for working capital,
$50,000 obtained from bonds at par at 6 per cent = $3,000 interest; 6 per cent is charged on $100,000 (plant cost) as part of manufacturing cost.

If after paying interest on bonds there remains *according to the books* zero profit?

Is not the $6,000 charged to interest on plant in the treasury and available for dividend?

Have not the stockholders made 6 per cent on *their* equity, the $100,000 investment?

The manufacturing account would show no profit to the stockholders.

The amount of the investment, or the interest on investment, should receive consideration when comparing various possibilities or actualities.

For example: If two plants manufacture the same class of goods at the same cost, exclusive of cost of plant, and are of the same capacity, and one plant cost was $100,000 and the other $150,000 and only half the goods can be sold and it is decided to shut down one plant, decision will not be made on the basis of what the plant *did* cost, but for other reasons, such as transportation charges, labor, market, etc.

But if the question is which of such two plants *shall be* built, then the one which will cost the least is evidently the better investment if other factors are equal, as it is not a question of cost of manufacturing, but of investment required.

Factors Involved in Purchasing a Shop Tool

In other words, the question of investment and interest on same is a comparative one, actual or suppositious.

For example: If the question arises, will it pay to purchase an expensive tool to do certain work previously done by hand labor, the factors to be considered are:

First.—How much less will the labor charge be per unit passing test.

Second.—How will it affect cost of material per unit passing test. This and the foregoing include consideration of scrap and net cost of such scrap.

Third.—The maintenance and depreciation charge against the tool.

Fourth.—Cost of power required—additional or pro rata, as the case may require.

Fifth.—Charges other than interest on additional space.

Sixth.—Cost of additional heating and lighting.

Seventh.—Additional cost, if any, of overhead charges of other nature, such as superintendent, factory clerical force, etc. But usually such overhead charges would not be a factor.

After ascertaining comparative cost per unit on such basis, and number of articles turned out per year, the net saving, if any, is shown, and such net saving is the net earnings on—

Cost of the machine, plus power equipment, plus space required, plus any other construction charge.

The above principle applies to comparisons between departments, or complete plants.

A company has two plants manufacturing similar articles and comparison is desired—

First.—On manufacturing cost—ready to ship.

Second.—On cost at market.

Third.—On capital required to conduct each.

The transportation charges (second) affect net results to company but are they part of manufacturing cost?

If a company is able to change from a long-credit system to practically a cash basis, has it changed the cost of manufacturing?

Such change would lessen investment required and the same net profits would give a greater rate of interest, but the *plant* investment would not be reduced.

New Goulds Centrifugal Pumps

The Goulds Mfg. Company, Seneca Falls, N. Y., has recently placed on the market a new and improved line of centrifugal pumps which can be furnished in both the single-stage single-suction and single-stage double-suction types. Both classes of pumps can be arranged for belt or direct connection to electric motors, gas, gasoline or steam engines and steam or hydraulic turbines. The double-suction pump is illustrated in Fig. 1, while the single-suction pump directly connected to an electric motor is shown in Fig. 2.

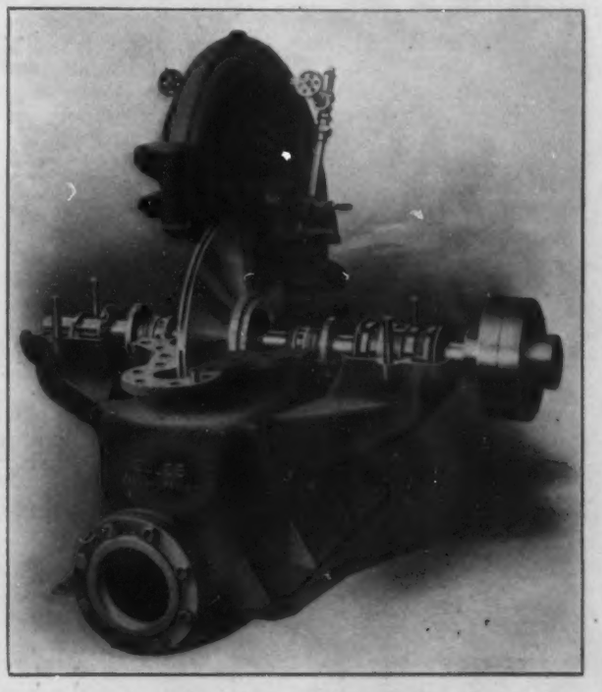


Fig. 1.—The New Single-Stage Double-Suction Centrifugal Pump Built by the Goulds Mfg. Company, Seneca Falls, N. Y.

In double-suction pump, illustrated in Fig. 1, the casing proper consists of two castings bolted together on a horizontal joint, the point of division being clearly shown. The type of construction was employed to secure access to the interior parts of the pump for easy inspection without disturbing the pipe connections. The impeller is of the inclosed type and is said to develop an exceptionally high efficiency when operated against heads having a maximum of 150 ft. The bearings are of the ring-oiling type, are independent of the stuffing boxes and have removable shells lined with anti-friction metal. Brass water sealing rings are provided for the stuffing boxes of both pumps.

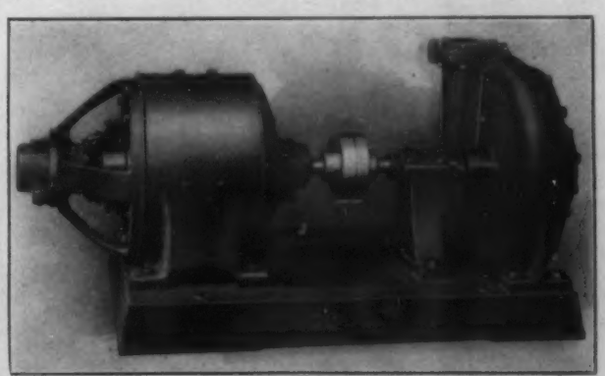


Fig. 2.—The Single-Stage Single-Suction Pump Direct Connected to an Electric Motor.

The impeller of the single-suction pump illustrated in Fig. 2 is of the open type. This part is accurately machined in order to minimize the clearances between it and the side covers, a feature which plays an important part in securing high efficiency. A feature of the impeller is that the end thrust has been almost entirely eliminated. The maximum head against which the single-suction pump will operate is 100 ft.

Sprinklers in Knock-Down Form

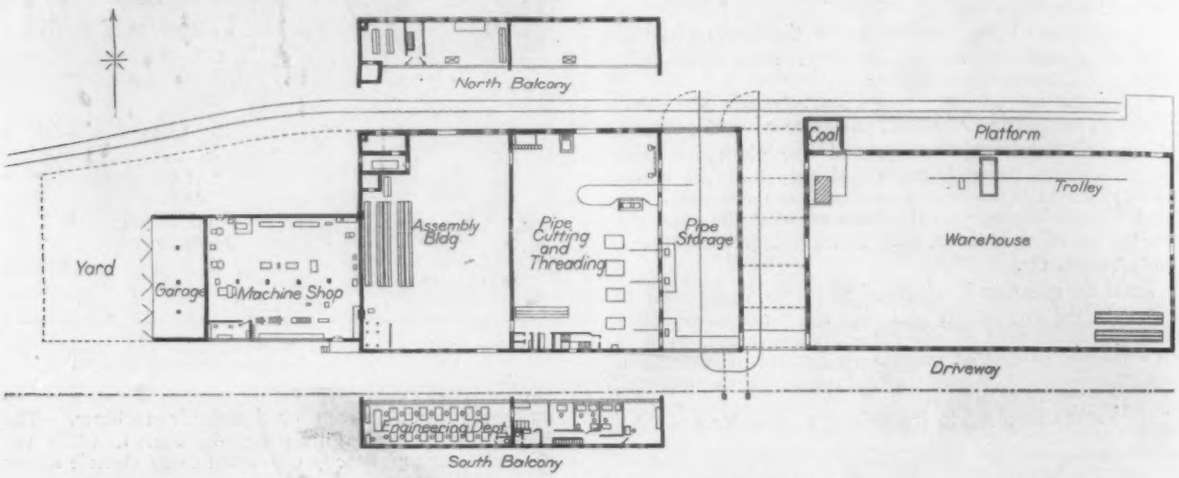
How the Rockwood Sprinkler Company Has Arranged and Equipped Its Chicago Works

A factory for turning out the parts of an automatic fire-extinguishing sprinkler system ready to erect has been built in Chicago by the Rockwood Sprinkler Company. Besides the interest which lies in the method of installing sprinklers, the works for handling the pipe, fittings and devices is unusually instructive. Continuous movement of material from department to department, economical and modern methods of handling the work and attractive and safe surroundings for the work people have been emphasized. The accompanying plan and reproductions of photographs taken in the factory will help in gaining an idea of the features contributing to efficient operation.

The plant covers an area of 450 by 114 ft. The output consists of complete automatic sprinkler equipments in knock-down form, and the fundamental idea in establishing the plant was to permit the building and assembly of a sprinkler equipment in all its many parts at the works and to ship it complete in a knocked-down form ready for installation by a traveling construction crew. The initial step in such work is the preparation of detailed working plans made from careful survey of the manufacturing, mercantile or warehouse property to be protected. Such plans show the pipe lines, every piece of pipe dimensioned, and also locate all the special fittings, valves, devices, etc., together with air compressors, tanks, towers and pumps.

The shop orders, with various parts classified for different departments, cover necessarily a wide range of material, and for the average equipment, say one requiring 1000 sprinklers, may total a full carload of 30,000 lb. A large plant or group of buildings will take possibly 20 cars of manufactured material. For much material the plant is solely a distributing station. The assembled material includes cast-iron, bell and spigot pipe and fittings, cut and threaded steel pipe and long and short turn water fittings, pipe hangers, valves of many types and sizes, tank, hydrants, slip joints, pumps, compressors, special automatic sprinkler devices, etc.

The several buildings are named on the ground plan. Adjacent to the garage are a cast-iron pipe yard and a steel-pipe storage, while a roomy yard for rough fittings storage is provided alongside the machine shop. The balconies shown are used for shop offices, sprinkler engineering department and also for storage of brass goods, road tool storage, repair department, etc. A brick tower supporting a sprinkler tank is equipped with two fireproof storage vaults.



General Plan of Chicago Works of the Rockwood Sprinkler Company.

Method of Unloading Pipe.

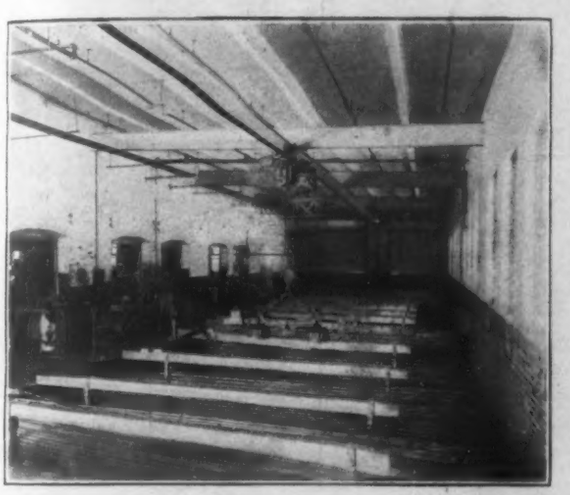
The warehouse, pipe and assembly buildings have girder-supported roofs without interfering columns, which would prevent easy handling of pipe. Areas requiring special light have saw-tooth windows. The machine shop has Detroit Fenestra frames and wired glass in metal frames is used throughout. Kinnear rolling shutters protect openings between buildings and are also used in ends of pipe storage building which open up to permit passage of crane with its load. Storage bins for fittings, nipples and parts, as used throughout the several buildings, are of steel, built at the Lyons Metallic Mfg. Company, Aurora, Ill. Tungsten lamps arranged in clusters furnish light. The fire protection equipment is complete, consisting of the Rockwood system, with hose connection to standpipes, steamer connections and 20,000-gal. gravity tank and filling pump.

Electric power is furnished by the Sanitary District of Chicago and is reduced from 10,000 volts through the customary static transformer. All larger machines have direct motor drive, while the group system is used to some extent in the machine shop. A Pawling & Harnischfeger electric traveling crane, with Cutler-Hammer Clutch Company's lifting magnet, is used for unloading and handling materials. A hinged extension of the trolley track overhangs the private railroad spur, and the crane serves the steel pipe storage building as well as cast-iron pipe yard and is used also for loading vehicles. A Westinghouse motor generator transforms the current from alternating at 220 volts, three-phase and 60-cycle to direct at 220 volts for the magnets.

It may be here mentioned that this plant is in the central manufacturing district of Chicago, on the Chicago Junction Railroad, and has transportation service which

the Junction road's direct connection affords with the 33 trunk lines entering Chicago. All steel pipe is received loaded lengthwise in gondola or flat cars, from which it is carried by the magnetic lift direct to the storage building. A special compartment is provided for each size and the building has some 20 carloads' capacity.

Passing endwise directly to a series of rapid roller cutters, with measuring gauge attached, the proper lengths are secured and again without change of direction the pipe passes to a battery of threading and reaming machines made by the Murchey Machine & Tool Company, Detroit. The smaller sized machines have double heads and operate at high speed. For larger sizes of pipe single head Bignall & Keeler machines are used and a cutting device is attached. A trolley and lift for handling the pipe easily are installed over machines threading pipes 5 in. and larger. All sizes of both cutting and threading machines are located opposite their respective sizes of pipe in storage bins and the minimum of handling results throughout the entire preparation of the pipe. All machines so far mentioned have separate direct motor drive.

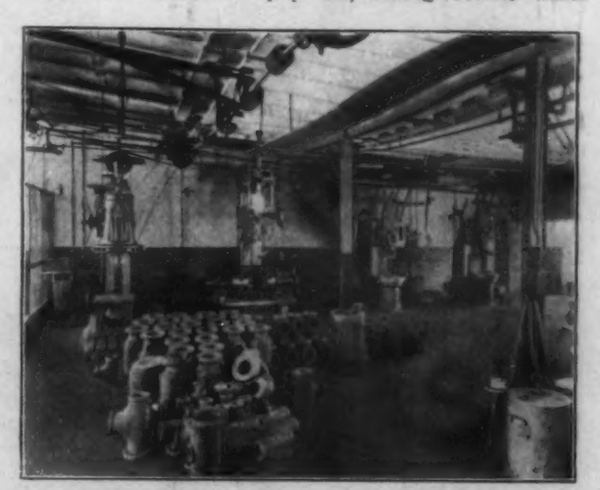


Pipe Storage, Showing Magnetic Trolley Hoist.

The pipe is now placed on trucks and after bundling and tagging is wheeled directly to the loading car. The bundling provides that the several pieces of a sprinkler line (the branch pipe extending from a cross main with openings for sprinkler heads up to eight in number) as required in accordance with the plan of installation, are tied together and marked for final location in the building under course of protection. This tag may, for example, read: "Building C, fourth floor, third bay," and upon arrival, the bundle is immediately moved to its destination, saving much time on the job.

View in the Pipe Shop.

The machine shop equipment affords economy of operation. Here are employed Baush multiple-spindle high-speed drills and Dreses tapping machines equipped with special rotating chuck and collapsing taps. There are also facing, shaping and testing machines, as required for the special product, like valves, fittings, etc., having many flanges. The entire plant impresses one as unusually complete in its minor equipment, having devices which



Drilling and Tapping in Machine Shop.

make for accuracy and economy of manufacture and for the welfare of the workers.

Because of the bulk and weight of materials, all the work is done on one floor, which is unusually light and pleasant. H. M. Pulsifer, president of the company, member of the American Society of Mechanical Engineers, designed the plant. It is understood to be the only specially constructed plant for the manufacture of fire protective equipment in Chicago or the middle West. The results of operation have proved, it is asserted, that a plant of its size, through consideration of every detail in its planning and operation, may get those benefits of a well

Sprinkler System Assembly Room.

perfected shop system which are generally supposed to accrue only to large establishments.

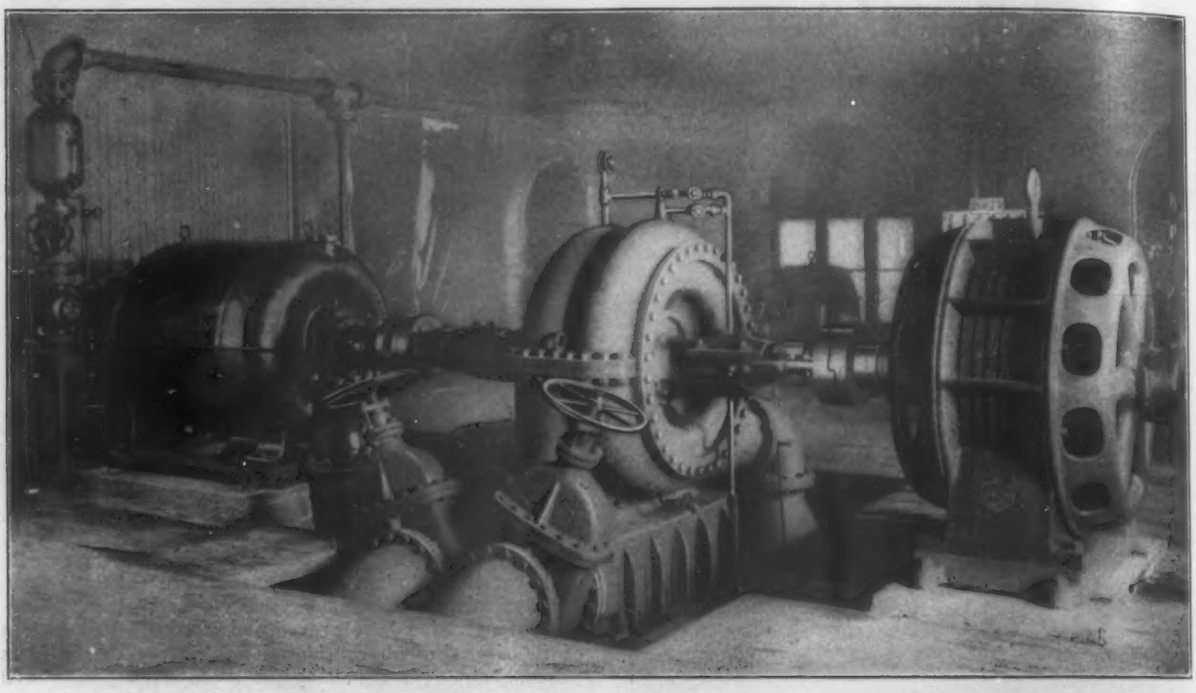
The Rockwood company, having solved to its satisfaction the details of this work, is now proposing to repeat the pipe-cutting plant in the several centers covering the territory in which it operates and it will probably make St. Louis the site of the next plant, the business having increased considerably within the past year in the central South. The executive offices of the company are in Chicago.

The McLauchlin patent steel conveyor cleat is now made by the American Supply Company, Commerce street, Mobile, Ala. It comprehends the use of angles fixed at desired distances to a chain, the angles lying perpendicularly to the direction of the chain, which is hauled in say a trough. The angles sweep the trough, catching the articles to be conveyed. The feature of the cleat is the way the angle is fixed in a link of the chain without rivets or bolts.

Minimizing Peak Electric Loads

Steam or Electric Pump Driving According to the Season

A method of solving the peak load problem has been devised and put in successful operation at the municipal lighting and water works plant, Lachine, Que., Canada.



An Electric Motor and Steam Turbine Driven Pumping Installation Made at Lachine, Canada, by the John McDougall Caledonian Iron Works Company, Ltd., Montreal, Canada.

The city purchases current on a peak load basis, that is, pays for a certain fixed amount of current which cannot be exceeded, but must be paid for whether entirely used or not. The amount of current purchased is sufficient to light the city and operate the pumping station at all times except during the three winter months, when the lighting load is the heaviest. A pump is utilized to provide water supply and fire protection for the city, the pressure being ordinarily 80 lb. per sq. in., while that for the fire service is 40 lb. higher. Calculations showed that operating the pump by steam for four or five hours each day during the winter months would be cheaper than buying sufficient additional current for entire electrical operation. A contract was accordingly placed with the John McDougall Caledonian Iron Works Company, Ltd., Montreal, Canada, covering the installation of a 14-in. two-stage, 5,000,000-gal. Worthington turbine pump, a 400-hp. steam turbine built by the Kerr Turbine Company, Wellsville, N. Y., and an Allis-Chalmers-Bullock motor, of the same size.

In addition to securing a lessened cost of operation, another advantage derived from this combination was a reduction in the insurance rate on the pumping station. It was decided to install the pump for operation by the induction motor for the greater part of the time, while the steam turbine was to be used during the peaks in the lighting load in winter and in case of any trouble with the motor. This arrangement was made possible by the use of two clutches on the shaft which are located on either side of the pump, the arrangement being indicated in the accompanying engraving, which shows the pump being driven by the electric motor.

One of the special features of the turbine pump is the use of a double suction which is patented by the contractor, the John McDougall Caledonian Iron Works Company, Ltd. By an ingenious application of the double suction it is possible to operate the same pump for either fire or domestic purposes at two different pressures, namely, 120 lb. per square inch for the former and 80 lb. for the latter, and still maintain the pump speed constant. The pressure for domestic purposes is secured by closing one valve and operating only one stage of the pump, thus changing it in reality from a two-stage to a single-stage unit. For fire service, where the higher pressure is required, both of the gate valves shown in the engraving are opened, and both stages of the pump are used. Another feature of the unit, which has a capacity of 5,000,000 Imperial gal., or 6,000,000 United States gal., per 24-hr. day, is the use of a split casing. In this way the chambers and the impellers can be examined without moving either the electric motor or the steam turbine. Ordinarily access to the interior of the pump is secured by removing the outer head, but this was out of the question in this instance as there was a prime mover on either side of it.

A New Pratt & Whitney Vise

Recently the Pratt & Whitney Company, Hartford, Conn., has placed upon the market a new type of quick-acting manufacturers' vise. The appliance has been given a very extensive trial by the maker on milling equipments

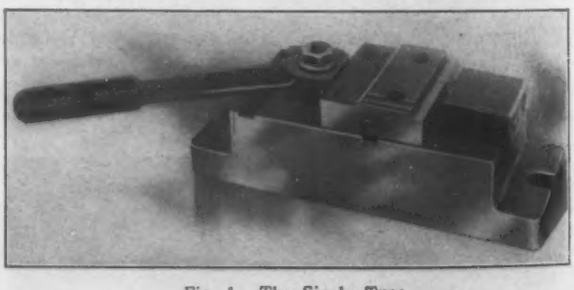


Fig. 1.—The Single Type.

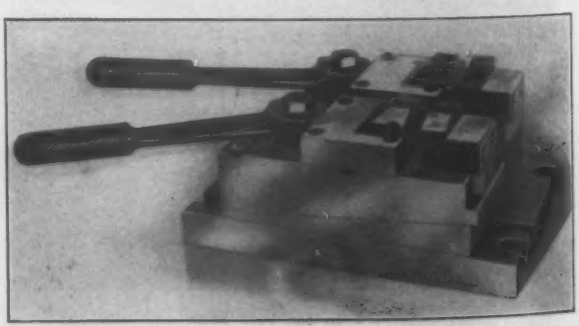


Fig. 2.—The Double Type.
The New Quick Action Manufacturers' Vise Made by the Pratt & Whitney Company, Hartford, Conn.

designed especially for gun work and has been very satisfactory. Two styles of vise are made, a single and a double one in different sizes for use in connection with maker's hand, No. 2 column power and Lincoln milling machines. Figs. 1 and 2 show the two styles, while the method of application of the vise is clearly illustrated in Fig. 3.

The design is very compact and in operation it has practically the rigidity of a solid casting. In use the action of the vise is directly opposite to that of the ordinary screw type. The outer jaw is the movable part and the inner one, against which practically all the working strains come, is

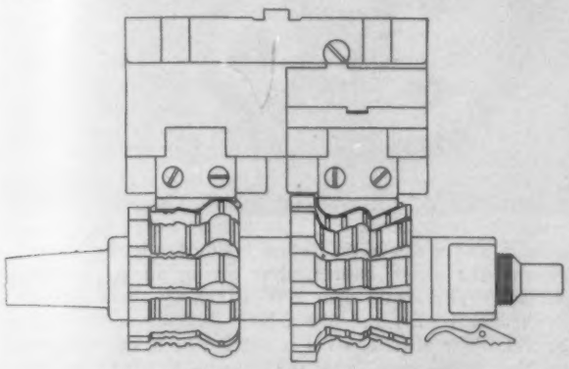


Fig. 3—Method of Application of the Vise.

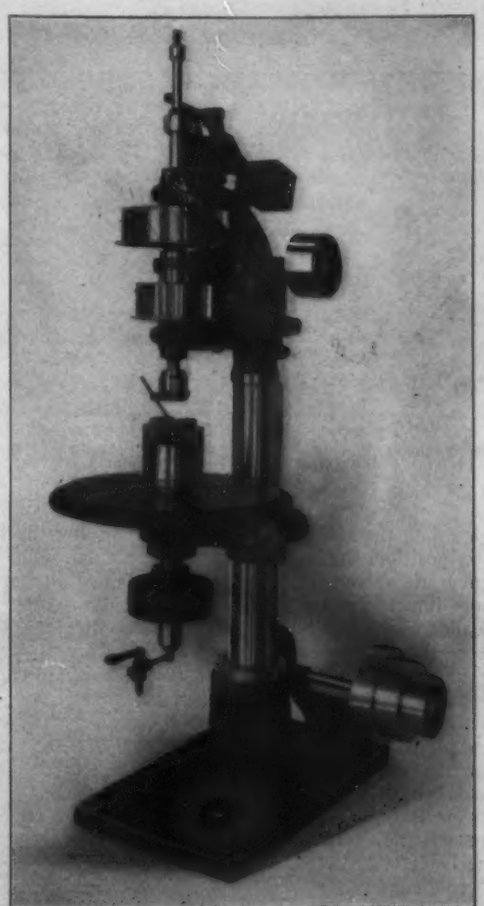
bolted stationary. A steel forging is used for the outer jaw holder which passes underneath and is supported by the stationary jaw. A hardened cam which is forged integral with the operating lever actuates the outer jaw holder, the cam being of such a shape as to give a wide jaw opening combined with a rapid and efficient binding action. The vises are regularly furnished without jaws, but can be arranged to accommodate a large variety of work easily by the use of special jaws, the construction of the vise being such as to permit their easy removal and insertion. In the double vise one of the sets of jaws is supported by a wedge, which also provides a vertical adjustment to compensate for any variation of the milling cutters due to uneven wear.

The Garvin Automatic Tappers

Two more machines have been recently added to the line of automatic tapping machines made by the Garvin Machine Company, Spring & Varick streets, New York City. Both are modifications of the company's standard No. 2 tapper. One, which is not shown, is designated as the No. 2 back-geared type, while the other which is known as the No. 2-A tapper possesses extra capacity as compared with the standard machine. The special features of the 2-A machine are the use of a special chucking arrangement mounted on the table and the ability of the tool to operate satisfactorily at high speed and to trip and reverse after being set, although the operator should continue to depress the starting lever.

The capacity of this new machine is ¼ to ⅞ in. in cast iron, and ¼ to ¾ in. in steel. Pipe taps up to the ½-in. size can be satisfactorily handled in cast iron, while for steel the maximum size is ⅜ in. less. A continuous belt drives the two friction pulleys with which the spindle is fitted in opposite directions, while a friction clutch keyed to the spindle is located between the pulleys. This clutch is connected with a lever at the right by a toggle arrangement, which can be adjusted to give the desired tension, so that an extra safety device to prevent the breakage of the taps is not required. This lever at the right controls the starting and the stopping of the tap which can also be tripped and reversed automatically at any point by an adjustable screw stop on the upper end of the spindle coming in contact with the tripping lever on the top of the machine. The spindle is balanced and fitted with a positive drive chuck for holding the taps.

The special chucking arrangement which is mounted on the table consists of one of the maker's standard automatic wrenchless two-jaw air-operated chucks of the type illustrated in *The Iron Age*, March 9, 1911. By using this style of chuck the productive capacity of the machine is greatly increased since there is no time lost in clamping and unclamping the parts being operated on. Moving the air valve in one direction causes the chuck jaws to open instantly, while a turn of the valve in the opposite direction grips the work securely. The tap is started for a couple of threads by the hand lever after which no further attention



The No. 2-A Automatic Tapper with Wrenchless Air-Operated Chuck Built by the Garvin Machine Company, New York City.

is required, as the tool will go to the bottom of the hole, trip and return automatically.

The capacity of the back-geared machine is from ⅛ to 1¼ in. in cast iron, ½ to 1 in. in steel and ¾ and ½ in. pipe taps in cast iron and steel respectively.

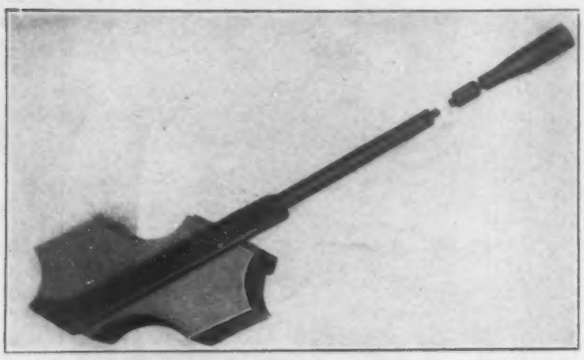
Automatic Sprinkler Efficiency.—Statistics recently compiled by the National Fire Protection Association show that of 11,257 fires in buildings equipped with automatic sprinklers the protection was successful in 95.01 per cent., or 10,695 instances. In these cases the sprinklers either extinguished the incipient blaze or held it in check, the operation of a single sprinkler head being sufficient in 3286 fires. In 6146 blazes two or three heads put out the fire before a larger number were opened by the heat. Approximately 59 per cent. of the fires occurred during the daytime or between the hours of 6 a. m. and 6 p. m. and 6 per cent. were discovered by employees. The failures or unsatisfactory fires in buildings equipped with automatic sprinklers, which amounted to 4.99 per cent. of the entire number reported, were for the most part due to preventable causes.

The W. R. Beatty Machinery & Equipment Company, dealer in new and second-hand machinery, specializing in forging equipment, has moved its office from 30 Carson street to 907 People's Bank Building, Pittsburgh, while its warehouse will be continued at the first address. Wm. R. Beatty, manager, will devote most of his time to the business of the Blaisdell Machinery Company, Bradford, Pa., builder of air compressors, he being its representative in the Pittsburgh district.

The Asbestos Protected Metal Company, formerly of Canton, Mass., which early this year moved part of its plant to Beaver Falls, Pa., has recently brought the remainder of it to that place. The company manufactures a patented asbestos covered metal, used for weatherproof skylights, roofing and siding, and is running full time.

The Heely Boiler Tools

Under patents recently granted to Patrick Heely, the Heely Tube Spreader Company, 346 Broadway, New York City, is manufacturing two new types of boiler tools, one



A New Tool for Placing Baffle Brick in Position in Water Tube Boilers Made by the Heely Tube Spreader Company, New York City.

for spreading the tube and the other for placing the baffle brick in position, the latter being the one illustrated. The efficiency of water-tube boilers is maintained in part by keeping intact the baffle walls which deflect the hot gases. As these walls are built of fire brick between the tubes when the boiler is being erected, it is a difficult matter to replace the brick when it disintegrates or it is removed to insert new tubes. Formerly it was necessary to employ split brick or chip the edges to upset the new brick into place when making repairs.

The general construction of the two tools is the same. Each has a movable head which is operated by a threaded stem that screws into a nut on the inside of the handle, and is controlled by a rod on the end. The working heads of the spreader are provided with large faces to prevent injury to the tubes. When this tool is used in conjunction with the one for replacing the baffle bricks it is a simple matter to remove an old baffle wall and replace it with new bricks. The head of the tool employed for replacing the fire brick has four gripping jaws which hold the brick. The tool is inserted between the boiler tubes, and when it reaches the proper location the movable jaw is drawn back through the action of the rod and the tool removed, leaving the brick in place in the baffle wall.

The Pusey & Jones Company, Wilmington, Del., has brought out a new monthly house organ entitled the Super-Calender. It is devoted to the paper-making machinery manufactured by this company. Mention is made of the quick building and erection of a complete Fourdrinier manila paper machine. The order for the machine, which was to have an output of not less than 60 tons a day, was received January 23, 1911. The erection of the machine was begun on April 30 and on June 3 it was ready for operation at the Fenimore Mills of the Union Bag & Paper Company, Hudson Falls, N. Y. Approximately 700 tons of raw material was converted into a paper machine and erected in place in 120 days.

An Improved Corliss Valve Gear

A Recent Type Developed by the Bates Machine Company

A new type of admission valve mechanism known as the inertia gear has been developd by Ernest A. Moore, chief engineer of the Bates Machine Company, Joliet, Ill., and is now being regularly used on all the Corliss engines built by the company. This mechanism is said to overcome the inherent faults in the existing types of admission valve gears, the special differentiating feature being that the disengaging parts instead of being forced into and held in their path by springs, rollers or other devices travel in the desired path by the natural force involved in the movement. Fig. 1 shows an engine equipped with this new type of valve gear, while Fig. 2 is a view of the gear, and Fig. 3 gives details of it.

Referring to Fig. 3 the dash pot arm *a* is in the form of a bell crank, one arm carrying the dash pot *b* and the other the latch block *c*. This arm is keyed to the valve stem *d*, and a sleeve on its inner side fits into a bored recess in the steam bonnet, thus giving an ample bearing surface. The steam arm *e* is driven by the valve rod *f* in the usual way, and has a large bearing surface on the bonnet. The latch shaft *g* is carried by a substantial boss on the steam arm, and the knock-off bar *h* is firmly mounted on the inner end of this shaft, the two parts thus

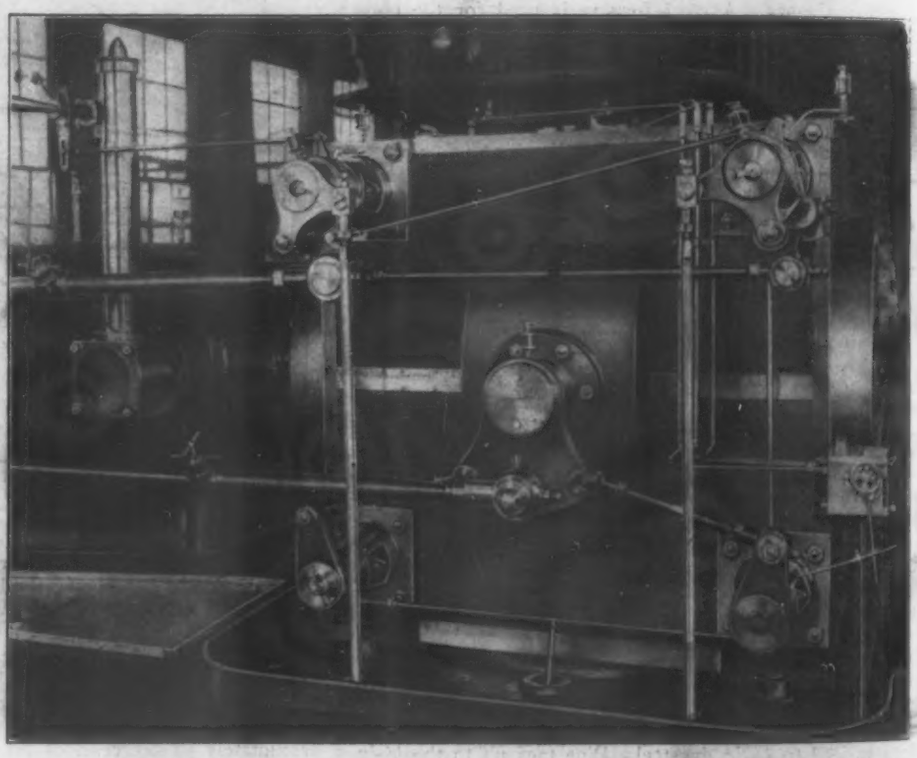


Fig. 1.—A Corliss Engine Equipped with a New Type of Valve Gear Made by the Bates Machine Company, Joliet, Ill.

forming practically a solid piece of metal. The knock-off ring *i* carries the knock-off cam *j*, and is controlled by the governor rod *k*. A safety cam, which comes into operation only in the event of some accident to the governor, is also mounted on the knock-off ring. When an accident occurs this cam is thrown into such a position that the valve cannot be opened.

In opening the valve in operation the valve rod moves to the left and the latch shaft engages with the block in the position shown in Fig. 3. It continues in this path until the knock-off bar comes into contact with the knock-off cam, when it is forced outward, thus raising the latch until the block is released. At that instant the dash pot comes into action and returns the arm to which the block is attached to its original position. The follower pin is fastened firmly to the steam arm, and acts only when the dash pot fails to close the valve. The construction and the balancing of the latch shaft and the knock-off bar attachment are such that the inertia due to the reciprocating motion and the weight of the parts insures an automatic latching action between the shaft and the block at

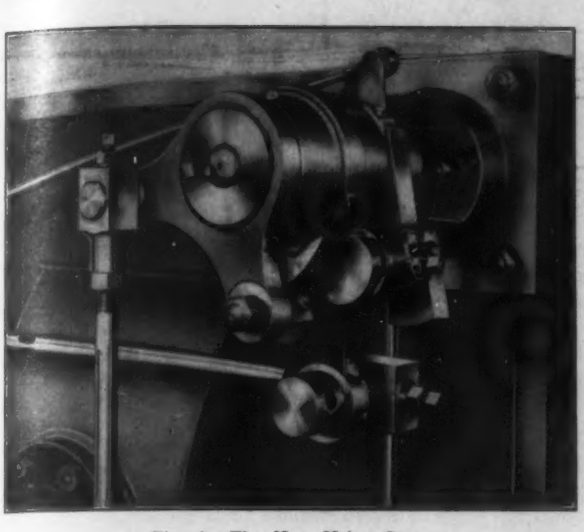


Fig. 2.—The New Valve Gear.

the end of the return stroke without employing a spring or mechanical device of any kind, and in turn assists the unlatching at the point of cut-off, thus reducing the reaction on the governor. The depth of the latching and the amount of clearance of the block can be set to any desired degree of precision by two adjusting screws while the engine is running at full speed.

The dash pot now used on the Bates Corliss engine is also of a special design, and quick action, noiseless operation and durability are claimed for it. It is made without packing or leather of any kind, and is set beneath the soleplate, while the manner of cushioning enables it to act over a wide range of lifts without necessitating readjustment. The dash pot cylinder and the plunger are of two diameters, ground to fit each other. When the plunger is at its lowest position there is an annular internal chamber which is full of air, and a passage is

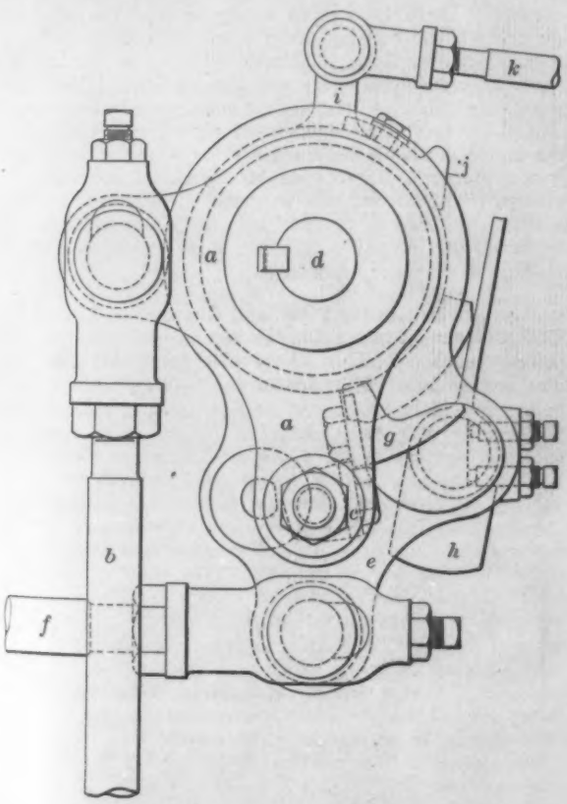


Fig. 3.—Details of the Gear.

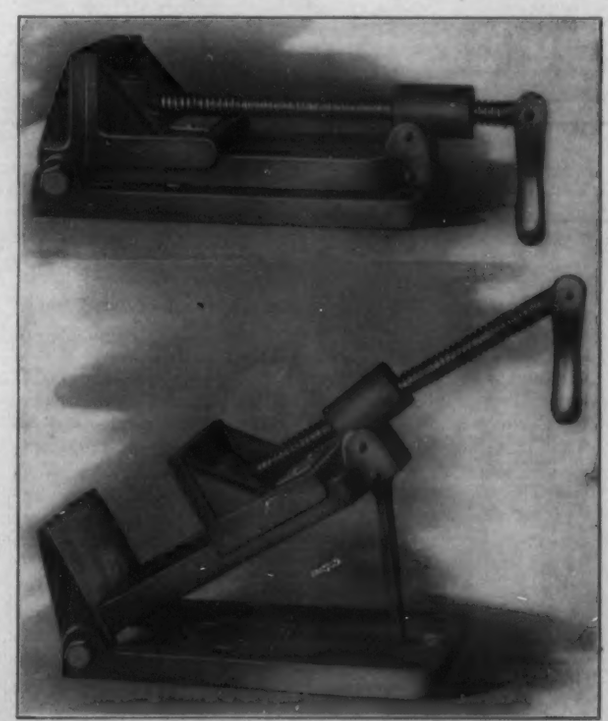
provided from this chamber to a point below the plunger, the area of this passage being varied by a needle valve to regulate the amount of air transferred to the lower chamber. In operation the air is expelled from the annular chamber to the vacuum chamber below the plunger in exact proportion to the lift of the dash pot, the air transferred forming a cushion. In this way the cushioning effect is always proportionate to the work, and the air is driven back and forth within the dash pot without noise, instead of escaping to the atmosphere with a hissing sound.

In addition to the changes in the valve gear and the dash pot other changes recently made in the design of the Bates engine have been made which had for their object the keeping in line as far as possible all the working strains in the valve drive, and the drives for both the steam and the exhaust valves are fitted with a telescopic detaching device to enable the valve gear to be worked by hand when necessary. Another improvement was the use of a heavier casting for the engine frame and the employment of the full Tangye type of construction.

The Schulz Tilting Vise

For use on a drill press, shaper or miller, F. A. Schulz, 218 North Jefferson street, Chicago, Ill., is manufacturing a quick-action tilting vise which in many cases will also take the place of several jigs for different operations. The vise is adjustable to a number of positions at angles varying from 0 to 45 deg., while the maximum opening of the jaws is 10 in., the limits of the tilting and the opening of the jaws being shown in the two portions of the accompanying engraving.

The vise is said to be simple in action and the adjustment is practically instantaneous. A clutch nut is pro-



A New Quick-Acting Tilting Vise Made by F. A. Schulz, Chicago, Ill.

vided for opening the jaws, and a quarter turn of the former is sufficient to release it and permit the screw to slide forward and backward freely. In addition to being adapted for drilling and facing operations, one size of vise is suited for attachment to hack saws where mitre work is being done. In addition to the regular type of jaws removable tool steel V-shaped jaws can also be furnished. Three sizes in all of vise are manufactured, the weight varying from 20 to 75 lb.

Repairs are being made to the De Bardeleben furnaces of the Tennessee Coal, Iron & Railroad Company, at Bessemer, Ala., and both stacks will be ready for operation at an early date.

The Kilby Locomotive & Machine Company, Anniston, Ala., has leased the plant of the former Western Steel Car & Foundry Company, located in that city, and is now operating part of it in the construction of locomotives and mine equipment.

The Warren Iron & Steel Company, Warren, Ohio, has increased its capitalization from $100,000 to $200,000.

New Tools and Appliances

This is essentially a news department for which information is invited.

Safety Device for Stamping Presses.—The W. H. Hibbard Mfg. Company, 79 Washington street, Brooklyn, N. Y., is manufacturing under patents granted to Mr. Hibbard a safety device for stamping presses which is designed to prevent the operators from having their hands or arms injured by not moving them quickly enough from below the slide of the press. This device consists of a guard in the shape of a rod or any other desired form which moves across under the slide toward the operator during the descent of the latter and pushes the arm or hand out of the way. When the slide is in the upper position this rod is in the rear of the path of the slide and above the bed plate. As the slide descends the bracket and the arm supporting the guard are carried downward by the slide and the arms are rocked forward through the action of links so that the rod is driven forward below the slide and forces the hand of the operator out of danger. When the slide returns to its upper position the arms move in conjunction with it and the rod is carried to its position in the rear of the slide.

A Three-Spindle Vertical Miller.—Hanford & Barkely, Rochester, N. Y., have recently built a vertical three-spindle milling machine which has a rather novel construction and also a great capacity for the production of parts requiring surface milling. The machine consists of a cylindrical base having a circular horizontal table with one T-slot and a vertical cylindrical table with two T-slots. The three spindles with their driving mechanism are located above the table and are spaced at equal distances. The electric motor supplying power to the machine is located over the three spindles and its shaft is directly connected to the vertical driving shaft by a sleeve. The three cutter heads are driven from a single worm cut on this shaft through three worm gears running in oil. From this point the drive is through a set of bevel gears, the driven one being splined onto the cutter-head spindle. A hand wheel enables each cutter head which has a long bearing surface to be adjusted for hight. Power for the table feed is transmitted to the platens by the vertical shaft running direct from the motor, the connection being through a worm and worm gear to a cone of three change gears, and thence through spur gears to a worm which in turn meshes with a 48-in. gear bolted to the bottom of the horizontal platen. A feed range of from 4 to 11 in. per minute measured at the circumference of the 60-in. horizontal platen is available. In operation fixtures are fastened to one or both platens and as many as can be located around the machine are used. On account of the spacing of the cutter heads at 120 deg. one or more fixtures will always be in the opening between two adjacent heads, and work can be removed and other work substituted before the fixture comes under the next working head, an arrangement which eliminates all loss of time. The heads can work continually, and the operator does not have to wait for the pieces to come from under the heads, as there are always one or more fixtures ready to receive new work. This machine has been given a trial of making car journal boxes and the average production is very nearly one box per minute, which is a marked increase over the old method of machining on a rotary side planer which had a capacity of about 450 pieces per day.

Horizontal Boring Machines.—An addition to the line of drilling and boring machines made by the Rockford Drilling Machine Company, Rockford, Ill., includes a horizontal boring machine and a double-ended machine that is especially adapted for boring the crank shaft bearings of gasoline engines. In the former machine a screw and hand wheel are employed for traversing the column instead of a rack and pinion. This screw is double threaded, which gives a quick movement to the column, and its use instead of the rack and pinion makes it possible to apply power feed for the traverse movement if necessary. The machine table is solidly supported by the bed, and the projecting end has a bracket to prevent any possibility of springing. The machine is belt driven by four-step back geared cone pulley, giving eight speed changes. Bevel gears transmit the power to a vertical shaft, which in turn connects through a second set of bevel gears with an intermediate shaft carrying a pinion that meshes with the large spur gear of the boring bar. A positive geared feed which is similar in principle to that applied to the company's upright drills is used, the feeding movement being taken from the spindle and transmitted through a gear box to worm gearing located at the right of the saddle. This box contains a cone of four gears and a tumbler gear mechanism controlled by a lever. The two boring heads or columns of the second machine are rigidly held together by a tie bar extending from one to another at the top. The boring heads cannot be adjusted on the bed, as is the case with the other machine, there being simply a vertical adjustment for the saddle. For locating the boring bars accurately when boring the bearings of different sized engines special index plates which are attached to the saddle are used. These plates contain a number of holes and are fitted to the saddle by inserting plugs through the holes of the plate into a second series of holes in the column. For finishing engine cylinders which require tapping operations on the upper part of the casting the regular sliding head drill press without the arm and the table is placed at the rear of the machine. The base of the press projects beneath the base of the boring machine and a rotary table can be placed upon the machine table for holding the jig containing the gas engine casting. If desired, a regular gang drill head of the proper size can be placed on the subbase of the horizontal machine.

Flexible Shafting Coupling.—For connecting two shafts set at an angle to each other or shafts out of line in varying degrees the Victor Appliance Company, Watervliet, N. Y., has recently produced a flexible coupling that is entirely devoid of externally projecting parts. In the construction of this coupling bolts and screws have been entirely dispensed with and the coupling can be readily dismounted without disturbing the bearings and alignment of either shaft by simply pressing a spring plunger which releases the housing. For oiling this plunger is depressed and the oil or other lubricant placed in the opening thus formed. There is a large cavity around the body and underneath the housing from which this lubricant is automatically fed through suitable grooves to the working parts by centrifugal force and the lubricant is prevented from spattering by the spring plunger which seals the cavity. A sheet steel dust cap is placed over the ends of the coupling and is held against the housing by a slight spring pressure. In this way foreign substances are prevented from entering the working parts of the coupling and the lubricant is retained inside. These couplings can be furnished in both single and double types for shafts ranging in diameter from ⅝ to 1⅝ in.

Duplex Driller for Pipes and Channels.—The Moline Tool Company, Moline, Ill., has recently developed a small drilling machine built on the duplex principle. The spindles are equipped with chucks for holding straight-fluted drills, and are hollow. A threaded rod is placed inside the spindle to prevent the drill from forcing back and to set it out the required distance to pierce the wall of the pipe or the side of the channel. Vertical adjustment for the tables enables different heights of jigs to be accommodated, and the only one required is a fixture for holding the piece to be drilled in place and a notched or drilled bar for spacing the holes. The spindles are driven by steel spur gearing, run in bronze bushings, and are equipped with ball thrust bearings. Rapid production is secured by having the drills operate simultaneously from both sides of the work, which also tends to eliminate drill breakage. As the drilling is done from the outside, the burrs are all on the inner surface of the piece, where they require no alteration. The largest size of drill accommodated by the machine is ⅝ in. in diameter, and the maximum size of pipe handled is 3 in.

Jack Screw.—W. A. Peck, 141 Brewery street, New Haven, Conn., is manufacturing a jack screw with a telescoping base which possesses a wide range of adjustment. The tilting top has a milled V-slot which is adapted for use under round work and when this is removed the base can be used as blocking, the range varying from 1 5/16 in. low to 2½ in. high. All parts of the jack screw are made of machine turned and case hardened steel.

The Machinery Markets

A heavy export business in machine tools is being done. A French railroad is inquiring for a large amount of metal-working machinery, and some German car and locomotive builders are buying in New York. The machinery trade is considerably encouraged over the large orders for locomotives and car equipment placed by the railroads during the week, which is expected to result in machinery buying on the part of car and locomotive builders. Trade is somewhat better in New England. Inquiries are more numerous in Cincinnati, but actual business is rather irregular. Pending water-power projects are creating an active demand for that class of machinery in Cleveland, and there is an improved call in that market for steel-plant equipment and ore-handling devices. In Chicago the American Bridge Company is expected to award contracts for $14,000 worth of machinery for its Gary, Ind., plants within a few days, but the local volume of business is only about 50 per cent. of normal. Inquiries are good in Detroit, but business is somewhat scattered. A better demand is noted in St. Louis, where a good business in small lots of machinery is being done. The demand is about normal in Texas, but an improvement is looked for in the trade from Mexico. On the Pacific coast the demand for small pumping units for mining work is said to be unprecedented, but there is no great sale for metal-working machinery. The call for refrigerating machinery continues heavy in the South, and a better demand has developed for machine tools.

New York

NEW YORK, August 23, 1911.

Machinery dealers who handle a general line of metal-working equipment found business considerably better last week, but machine tool manufacturers' agents who handle one or two types of machines say that they find no signs of improvement. The orders that came to the large machinery dealers were principally scattered, although the General Electric Company placed a good deal of business against the large list it issued during the latter part of July. It may be that the manufacturers' representatives will get some of this business later on, as there is more to come. The buying so far done, from all accounts, does not complete the requirements called for in the list which aggregated about $80,000 worth of machinery. Dealers are taking heart over the recent activity on the part of the railroads which placed heavy orders for car and locomotive equipment during the week. It is thought that the car and locomotive builders will have some machinery requirements to fill in order to turn out the equipment they have contracts for, and as some of the railroads are intending to build cars and locomotives in their own shops, business is looked for in that quarter. The Delaware, Lackawanna & Western Railroad is inquiring for a few machines and the Erie Railroad shows signs of making purchases for replacements. Export trade continues unusually good. A French railroad is inquiring in this market for a large number of machine tools for its car shops. The list calls for an expenditure of more than $3,000. German car and locomotive manufacturers are also buying good round lots of machine tools and the Canadian car builders are contributing some good trade to this country. Most of this business is coming through New York export houses.

The Ingersoll-Rand Company, 11 Broadway, New York, has let contracts for the construction of a concrete brick and steel building, 100 x 600 ft., to be erected at Phillipsburg, N. J. When the building is completed the A. S. Cameron Steam Pump Works, now in New York, which is operated by the Ingersoll-Rand Company, will be housed in the structure. The machinery now in the Cameron plant will be moved to Phillipsburg and additional equipment will be bought so as to double the company's present manufacturing facilities. The structure for which contracts have been let will be used entirely for machine shop purposes and it will be served by two cranes of about 30 tons' capacity. A power house will also be erected, the size of which has not been determined.

The new plant which the Terry & Tench Company, now at Lexington avenue and 131st street, New York, is building on the Newark meadows, N. J., is now well under way and the company expects to occupy it October 1. The plant includes a structural shop, 80 x 210 ft., a large machine shop, blacksmith shop, template room, boiler and engine house and store room. The company has bought no machine tool equipment and the machinery at its present plant will be moved and will be added to after the new plant is in running order.

The Niagara Falls Metal Stamping Works, Niagara Falls, N. Y., has nearly completed enlargements to its factory, which will about double its manufacturing facilities. The company will add one or more drop hammers, several power presses, some wire-working machinery and later on a few machine tools. It will also be in the market for shafting, couplings, belting, etc.

The Heller Brothers Company, Newark, N. J., manufacturer of files, rasps and small tools, is increasing its file department by installing two simplex boilers of 500-hp. capacity, which will give power to run additional file machines. The company is adding a new department for the manufacture of a line of Swiss pattern files. The new addition and alterations will be completed by the middle of September.

The Buffalo Steam Pump Company, Buffalo, N. Y., has purchased property adjoining its present plant at North Tonawanda, N. Y., on which are buildings giving the company an additional floor space of about 35,000 sq. ft. Later other buildings will be erected.

The Hollow Metal Construction Company has been incorporated with an authorized capital of $150,000 to manufacture metal trim for construction work. The company has offices at 45 Webster avenue, Jersey City, N. J., and is now looking for a site to locate its proposed plant.

K. Kaufmann & Co., 169-171 Murray street, Newark, N. J., manufacturers of traveling bags, have had plans prepared for an addition to their factory to cost about $6,000.

The Lewiston & Lake Ontario Shore Power Company has been incorporated at Lewiston, N. Y., and will build a power plant to furnish light and power to the village of Lewiston and the towns of Wilson, Porter and Newfane. The directors are J. B. Scovell, Lewiston, J. B. Coit and H. M. Coit, Niagara Falls; Arthur Mackey, Youngstown; A. T. Ransom, Ransomville; Charles H. Tugwell and Harvey Sanford, of Wilson, N. Y.

The Weymer Company, Syracuse, N. Y., has completed plans for a three-story factory building, 30 x 102 ft., of brick, tile and steel construction, which it will erect at Division and Solar streets.

The Union Cutlery Company, Tideoute, Pa., has completed its new factory at Olean, N. Y., and will move its plant to the new location at once.

Bids are being received by W. W. Cheney, president board of managers, Syracuse State Institution for Feeble-Minded Children, Syracuse, for two new boilers and piping for the power house and reconstruction of electric light wiring system.

The Water and Sewer Board, Rome, N. Y., has adopted plans for a sewage-disposal plant. An issue of bonds to the amount of $128,000 to defray the expense of construction is being arranged for.

Plans for a water-works system to be constructed by the village of Churchville, N. Y., are being prepared by Witmer & Brown, contracting engineers, Buffalo, N. Y.

The Hurwitz Bros. Coal & Iron Company has purchased at bankruptcy sale for about $32,000 the plant, equipment and stock of the General Foundry & Machine Company, at Sand street and West Belden avenue, and will reopen and operate the foundry, employing from 50 to 100 molders.

The Utica Knitting Company, Utica, N. Y., will build a brick addition to its p[illegible]

S. DIESCHER & SONS.
Mechanical and Civil Engineers,
PITTSBURGH, PA.

THE MACHINERY MARKETS

The Allentown Boiler Works, Allentown, Pa., has been awarded the contract to erect and overhaul the blast furnace at Standish, N. Y. The material for the work is now being furnished and the men under Superintendent Frank Collum will start work in two weeks.

Business Changes

The Alberger Condenser Company and the Alberger Pump Company, 140 Cedar street, New York, have opened a branch office at 97½ Peachtree street, Atlanta, Ga., to be in charge of R. S. McMichael. The Pacific branch office of these companies, located at 1503 Market street, San Francisco, is now in charge of C. F. Braun & Co., Inc.

New England

BOSTON, MASS., August 22, 1911.

Little that is new has developed in the machinery market. Probably more people are now on vacation than at any time during the summer, which naturally has its influence upon buying of all descriptions. The feeling of confidence continues and is borne out by the experience of some of the manufacturers of machinery, though not by all of them. Foreign business continues good, and on the whole the domestic demand is slightly better. The tying up of British shipping is regarded with some concern and the influence is already felt in Boston, where freight is delayed.

The large shops of the Potter & Johnston Company, Pawtucket, R. I., are fairly busy, a large percentage of the orders for machine tools coming from abroad, chiefly from automobile builders. However, increased business is noted from American buyers, chiefly in the automobile trade. The company has begun the manufacture of textile machinery, comprising cards and pickers, which will constitute a new department.

The American Emery Wheel Works, Providence, R. I., has started the erection of a new building 45 x 95 ft., one half having a basement and two stories, the other half an additional floor. The building will be used largely for the storage of raw and finished material, with the ground floor as an addition to the molding room.

The business of the American Ship Windlass Company, Providence, R. I., is being gradually moved to the works of Williamson Bros. Company, Philadelphia, which controls the company. The capstan department has already left Providence. The works there are still engaged in the manufacture of the company's mechanical stoker.

The Jacobson, Brandow Company, Pittsfield, Mass., manufacturer of spark coils, proposes to double its business and will add $50,000 to its capital stock. The expectation is that the factory will remain in Pittsfield, but this is contingent on the action of the townspeople in subscribing the additional funds.

The L. S. Starrett Company, Athol, Mass., manufacturer of machinists' tools, has converted its factory into an open shop and has abandoned the union label.

The New York, New Haven & Hartford Railroad will erect a boiler house and a small workshop at Worcester, Mass.

William C. Shute has been made the director of the Westfield, Mass., Independent Industrial School. He comes from the manual training school at Denver, Col.

The Southern New England Railroad Company, the New England branch of the Grand Trunk, is making active preparations for the building of its new line from Palmer, Mass., to Providence, R. I., where it will have important shipping advantages. The Massachusetts portion of the system, entering Rhode Island at Woonsocket, will pass through Palmer, Brimfield, Sturbridge, Southbridge, Dudley, Webster, Douglas, Blackstone and Uxbridge and will be 58 miles long.

The Hoosac Cotton Company, North Adams, Mass., announces that it will spend $1,000,000 in enlarging and improving its plant in that place. The Gorton-Pew Fishery Company, Gloucester, Mass., will establish a packing plant at Burling, N. F., to take care of the product of 12 fishing stations just purchased.

The H. B. Smith Company, Westfield, Mass., manufacturer of heating apparatus, will erect a core building at the north side plant 80 x 150 ft.

The South Norwalk Engineering Company, South Norwalk, Conn., manufacturer of special tools and machinery, will be in the market in the late fall for the purchase of additional equipment with a view to increasing its output about 20 per cent.

Hemming Bros., Inc., New Haven, Conn., have purchased the business of the Charles Greiner Company of that city and will continue the manufacture of that company's line of automatic wire straightening machines and riveters and automatic grinding and polishing machines. Both the Messrs. Greiner, senior and junior, have become connected with Hemming Bros. and will have charge of the department of the business which will manufacture the Greiner machinery.

Philadelphia

PHILADELPHIA, PA., August 22, 1911.

Current business is still largely confined to small and moderate sized single tools for early delivery, together with an occasional order involving some two or three machines. Inquiry has not broadened very materially, although several small lists for special shop equipment are being quietly considered by some dealers. The railroad demand is practically at a standstill. Industrial plants generally are going at a slightly better basis. Conditions in the shipbuilding trade are more promising and a better volume of business is coming to the locomotive builders. Machine tool builders report orders as being scattered and not in sufficient volume in the aggregate to increase plant activities very greatly. Manufacturers of special power transmission equipment report the volume of business for export as being fairly well maintained. A fair amount of buying is reported in power equipment, largely confined, however, to that of the smaller horse powers. The second hand machinery market drags; some little business in equipment of that class has been done by machinery merchants, but regular dealers in equipment of that nature report business as being of a desultory character. Some spotty improvement, both in the demand for gray iron and steel castings, is reported, but business continues far below normal.

The Pennsylvania Railroad Company has sent out an inquiry for a moderate sized special drilling machine.

The Southwark Foundry & Machine Company is giving notice of a special meeting of its stockholders to be held on August 23 at its offices in this city for the purpose of considering an increase in its capital stock from $500,000 to $750,000.

The Philadelphia Rapid Transit Company has taken city permits for the erection of a two-story brick power house 65 x 93 ft. at 1823 to 1829 East Letterly street.

Sealed proposals will be received by Joseph F. Hasskarl, acting director department of wharves, docks and ferries, 555 Bourse Building, for two bottom dump scows of not less than 500 cu. yd. capacity.

The city of Philadelphia will receive bids until August 31 for the erection of a municipal convention hall three stories, of brick, terra cotta and steel, from plans by J. T. Windrim, architect. The estimated cost is $1,500,000.

Daniel Weaver purchased the plant and greater part of the equipment of the late firm of Weaver & Wittle, Lebanon, Pa., at a trustees' sale August 15. He expects to operate both the foundry and machine shop.

A State charter has been granted the Manatawny Railroad Company with a capital stock of $100,000. The company proposes to construct an eight-mile road between Douglassville and Spangsville, Berks County, Pa. The incorporators named are Milton J. Pierson, Bethlehem, Pa.; John Palmer, Jr., Jersey City, N. J.; Stephen Robinson, Jr., Lewis F. Hutmacher, Bethlehem, Pa.; Charles M. Allen, Bayonne, N. J.; Daniel J. Driscoll, Reading, Pa., and Robt. L. Runyon, Allentown, Pa.

A. L. Rhoads, county controller, Berks County, Reading, Pa., will receive bids until September 14 for the building of a reinforced concrete viaduct over the Schuylkill River at the foot of Penn street, reading, Pa. The structure will be 1350 ft. long, 80 ft. wide and composed of nine 48-ft. and five 110-ft. arches and retaining walls. Plans and specifications may be obtained from the county controller or from Charles F. Sanders, county engineer, Reading, Pa. The same official will also receive bids until September 5 for the erection of a reinforced concrete bridge in the borough of Topton, Berks County, Pa., over Toad Creek, plans and specifications for which may be obtained on application to the county commissioners, Reading, Pa.

The Baldwin Locomotive Works reports a slightly better demand for locomotives and feels more encouraged with the outlook for business for the remainder of the year. It now has on its pay rolls nearly 11,000 employees, which closely approximates the number prior to the labor trouble several months ago. Denials

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are made by officials of the company that any plan to establish branch plants or remove the local plant to other cities, as has recently been noted in public prints, is being considered or contemplated.

The Emmert Mfg. Company, Waynesboro, Pa., manufacturer of vises, etc., has had plans prepared for an addition to its works 40 x 45 ft. The company will install an air compressor for air chipping, etc. A number of other improvements will be made for the handling of work rapidly. Much of the equipment has been purchased.

Work on the large brick broom factory which is being erected by W. E. Schmick, at Hamburg, Pa., is being pushed rapidly. When finished it will be equipped with the most improved machinery for the manufacture of brooms and will give employment to at least 150 persons.

Edgar Amole and Frank Hopel, both of Reading, Pa., are having plans prepared for a foundry to be built of brick, one story, to be erected at West Hamburg, Pa. The cost will be about $10,000, and the firm will be known as the A. & H. Foundry Company.

Chicago

CHICAGO, ILL., August 22, 1911.

Machinery dealers in this market report the general trade in machine tools as less active at the present time than for many months and that the total volume of business is less than 50 per cent. of normal. The week was not entirely lacking in business as the Chicago & Northwestern Railway is understood to have placed orders for approximately $30,000 of tools to be installed at its various roundhouses. The American Bridge Company will award this week the orders for some $14,000 of machines for its Gary, Ind., plant. The International Harvester Company has not yet purchased machines for which it has been in the market for some time. The Chicago, Burlington & Quincy Railroad is inquiring for a large lathe. A western Illinois gas engine builder is about to place an order for a number of radial drills and an additional sale of tools to the amount of $2,000 is recorded.

The Automobile Construction Company, Chicago, has been incorporated with a capital stock of $27,000 by Harry M. Wells, Albert T. Graham and William E. Fuller.

The Simplex Auto Cranker Company, Chicago, organized to manufacture and deal in automobiles and machinery, has been incorporated with a capital stock of $100,000 by Edwin A. Gardner, Ignatius E. Halton and Willard Patrick.

The Goulds Mfg. Company, Chicago, has been incorporated with a capital stock of $10,000 by James C. Jerrery, Herbert J. Campbell and Charles V. Clark.

Joseph T. Ryerson & Son will erect a one-story brick building on West Eighteenth street, Chicago, to be used as a pattern shop.

The Central Iron & Metal Company, Chicago, has purchased a tract of land at Thirty-sixth place and Rockwell streets on which it is intended to build a plant to cost $60,000.

The Coey-Mitchell Automobile Company, Chicago, is seeking a plant in which to build automobiles and has under consideration buildings at Anderson, Ind.

The B. C. Small Mfg. Company, Centralia, Ill., is to begin the manufacture of a corn-husking device at Rockdale. It is expected that a new plant will be started in the near future.

The Rockford Machine Tool Company, Rockford, Ill., has let the contract for the building of its new factory. It is to be of reinforced concrete and construction has been started.

The Country Traction Company's power house at Oak Park, Ill., was damaged by fire recently to the extent of $10,000. The principal damage was to hoisting machinery.

The Donmeyer-Gardner Company, Peoria, Ill., has been incorporated with a capital stock of $150,000 and will do a general milling business. Incorporators are Ellen C. Donmeyer, R. G. Gardner and Charles R. Wheeler.

E. M. Burr & Co. are planning to erect a foundry at Champaign, Ill.

The city of Paxton, Ill., has authorized the issuance of bonds to the amount of $17,000 for the construction of an electric light plant and the purchase of machinery. The matter is in charge of the city clerk.

Geo. M. Limbert & Co. have established a foundry at East Chicago, Ind.

Keck, Gonnerman & Co., Mount Vernon, Ind., are about to erect a two-story brick addition to their foundry and machine shop.

The Losbough-Jordan Tool & Machine Company, Elkhart, Ind., manufacturer of special machinery, has recently contracted to build a number of large machines for match making. This will necessitate an increase in its equipment as the work progresses and quite an addition to its working force.

The city clerk of Mobridge, S. D., will receive bids covering the construction of a 100,000-gal. steel tank and 100-ft. steel tower.

The Colorado Ingot Iron Pipe & Culvert Company, Colorado Springs, Col., has secured a new plant location and will erect a steel factory building in which new machinery will be installed. This company is associated with the American Rolling Mill Company, Middletown, Ohio.

Cleveland

CLEVELAND, OHIO, August 22, 1911.

The demand for some lines of machinery shows an improvement. Pending water power projects in various sections of the country are making an active demand for hydraulic turbines and in addition to orders placed a good volume of business in water wheels is pending. The demand for steel plant equipment, which has been light for some time, also shows an improvement. Heavy handling machinery is not moving rapidly, but some orders are being placed for small installations for coal and ore handling plants.

Some machine tool builders are getting a better volume of business than a few weeks ago, but this improvement does not appear general. One Ohio manufacturer reports a very marked improvement in the demand for hydraulic presses. With local machinery dealers conditions are very quiet. No good sized inquiries are pending and small lot sales are scarce. Railroads in this territory are buying practically no machinery equipment and there are no prospects that more than a very limited amount of business will come from this source for some time.

There is considerable construction work in manufacturing plants and extensions going on at present and in prospect in the northern part of Ohio, but it is largely outside of metal working lines. Pottery manufacturers appear to be particularly active in this regard at present.

The Board of Commissioners for the erection of the Lima State Hospital, Lima, Ohio, will receive proposals for the mechanical equipment for that new State institution September 15. Plans and specifications are on file at the office of the architect. Frank L. Packard, New Hayden Building, Columbus, Ohio.

The Shull Steel Castings & Mfg. Company, Canton, Ohio, has let a contract for the erection of a fireproof pattern storage building 140 x 60 ft. and 36 ft. It will be built of brick and concrete. This company just completed some improvements to its plant. One 35-ton and one 10-ton electric overhead traveling crane have been installed and its acid open hearth furnace has been enlarged from 15 to 25 tons capacity.

The Globe Wire & Fence Company, Cleveland, has been incorporated with a capital stock of $20,000 to manufacture wire fence and fence making machines. The company is located at present on Columbus road. William C. Smith is the manager. Other incorporators are Clewell M. Smith, S. E. Williams, E. G. Steipel and S. C. Davis.

The Samuel Austin & Son Company, Cleveland, has the contract for the erection of a large addition to the plant of the Banner Electric Company, Youngstown, Ohio. Work on the foundations has been started and it is the intention to have the extension completed early in the spring.

The Gem Incubator Company, now located at Trotwood, Ohio, will build a new plant in Greenville, Ohio, for the manufacture of incubators and other products used in the poultry industry. Two buildings will be erected, one 100 x 200 ft. and the other 40 x 60 ft. John Somers is the president.

The Lorain Metal Products Company, Lorain, Ohio, has been incorporated with a capital stock of $30,000 to operate the plants of several concerns in that city engaged in the manufacture of brass and iron products that were recently combined.

Plans for a new power builder to be erected in Toledo, Ohio, are being prepared by Architects Schenk & Williams, Dayton, Ohio.

The Climax Nutlock & Bolt Mfg. Company, Cleveland, has been organized with a capital stock of $15,000

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by C. L. Dunham, V. C. Walker, J. S. Walker and others.

The contract for the erection of a large hydroelectric plant to be built near Defiance, Ohio, by the Auglaise Power Company has been let to the Hydraulic Construction Company, 88 Pearl street, Boston, Mass.

A new plant will be built in Bryan, Ohio, for the manufacture of various novelties as the result of a contract closed between the Bryan Chamber of Commerce and Henry S. Winzeler, of Archbold, Ohio. A plant now located in Archbold will be moved to Bryan.

The Superior Metal Products Company, Elyria, Ohio, has outgrown its present capacity and is planning the erection of a new plant. H. E. Hall is the manager.

A paper mill will be established in Franklin, Ohio, by a new concern at the head of which is A. B. Smith, which has purchased the plant of the Union Wax & Paper Company. The plant will be rebuilt.

The Saxon China Company, Sebring, Ohio, has commenced the erection of a large 9-kiln pottery for the manufacture of porcelain ware. The plant will cover a ground space of 170 x 500 ft.

The Hoblit Nut Lock Company, Dayton, Ohio, has been incorporated with a capital stock of $10,000 by Boston F. Hoblit, Gilbert T. Brown and others to manufacture nut locks for steam railroad and traction line rails.

Cincinnati

CINCINNATI, OHIO, August 22, 1911.

The latter part of the month bids fair to show up better, so far as the machine tool industry is concerned, than did the first two weeks. Inquiries are more numerous, but actual business booked continues rather irregular. However, a few firms are receiving a sufficient number of orders to warrant keeping their plants running on full time and with full working forces. The export trade continues fairly satisfactory.

Manufacturers of engineering specialties, such as valves, etc., are experiencing a lull, though this is seasonable, and the present letup will enable them to catch up with orders already booked, as well as make up future plans.

Gasoline engine manufacturers are very busy, this class of motive power being now very much in demand in the South for operating pumping machinery.

Ig. Grimm & Co., Cincinnati, have changed the firm name to the Grimm Iron Works. This company makes a specialty of structural and ornamental iron work and has recently moved from its old location on McMicken avenue to a large newly constructed plant at 2431-33-35 Spring Grove avenue.

The Sidney Tool Company, Sidney, Ohio, announces an increase in its capital stock from $50,000 to $100,000.

It is reported that the Eagle Paper Mill, near Franklin, Ohio, that has been shut down for several years, will soon be rebuilt and put in operation. Considerable new equipment will doubtless be needed. A. B. Smith, of Middletown, Ohio, is said to be the principal party interested.

The Imperial Machinery Company, a new Cincinnati incorporation with $50,000 capital stock, manufactures only dry cleaning and pressing apparatus and is not in the general machinery business, as reported in a few of the trade papers.

The Air Friction Carbureter Company, Dayton, Ohio, has recently increased its capital stock from $10,000 to $20,000. Nothing is yet known as to plans for any increase in manufacturing facilities.

The necessary tools for the machine shop department of the Ohio Mechanics Institute have been donated by the machine tool builders of Cincinnati, through the National Metal Trades Association. The interior work of the institute's new building is progressing rapidly and a number of departments will soon be ready for occupancy.

The Herr Engine Company, Portsmouth, Ohio, manufacturer of gasoline traction and pumping engines, now has its new plant in full operation. The building is 80 x 160 ft., two stories and of monitor type construction. The company has lately installed a 24-in. Libby turret lathe, two radial drills, a large milling machine, etc.

The Fosdick Machine Tool Company, Cincinnati, manufacturer of radial drills and drilling machines, has begun the erection of an addition to its plant which will greatly increase its manufacturing facilities. The company states that no equipment will be required at the present time.

The Preston County Development Company, Cascade, W. Va., has been incorporated with $100,000 capital stock to erect a plant for furnishing light and power to three nearby municipalities. Among the incorporators are Everhart Bierer, of Morgantown, and Roy Clear and D. B. Davis, of Cascade.

The United States Electrical Tool Company, Cincinnati, now has its new plant in the western part of the city in full operation.

Detroit

DETROIT, MICH., August 21, 1911.

The Detroit machinery market exhibits no noticeable change over last week's conditions. Orders have been somewhat under normal expectations, averaging small amounts and generally scattered. Inquiries are good, however, and prospects for fall machinery demands are excellent.

The automobile industry in the past year has passed through one of the most serious crises that has ever faced a new enterprise and is now firmly and safely established with the confidence behind it of the most conservative business interests and the public at large. Indications are that the 1912 season will surpass any previous year. Large expectations are indulged in freely by the manufacturers and many tangible additions to plants and equipment have been made or are under way.

Flint, Mich., seems destined to adorn the map as a manufacturing city of more than passing notice. A number of large industries have been recently started there and others are in contemplation.

Building conditions seem to be improving. During the past week awards on new work were many, corroborating the theory already advanced of there being a large volume of awards to be made on work previously figured. Awards of contracts have been made on the large new buildings of the Continental Motor Company, a branch Carnegie library, a four-story commercial building for John Bornman and a church edifice. A fair amount of new work has been figured upon.

The Brenkert Light Projection Company, Detroit, has been incorporated with a capital stock of $20,000.

The Chas. J. Yunk Aeroplane Company, Detroit, has been incorporated with $25,000 capital stock.

Automobile Mfg. & Engineering Company, Detroit, has increased its capital stock from $1,000 to $50,000.

Definite announcement has been made by Hugh Chalmers, president of the Chalmers Motor Company, and Lucius E. Wilson, secretary of the Board of Commerce, that the American Cash Register Company will move its plant from Columbus, Ohio, to Detroit and consolidate with the Michigan Cash Register Company, with Mr. Chalmers as president of the merged concerns. A site for factory buildings has been secured and the location will be made public as soon as the selection is approved by the board of directors.

The Metzger Motor Car Company has just contracted for the erection of a building which will triple the capacity of its present plant at Milwaukee avenue and the Grand Trunk Railroad, Detroit. In addition to this the company is putting up a heat treating plant where the metals used in the construction of Everitt cars will be subjected to the Metzger company's own process of hardening. The larger of the two additions will be a structure four stories 68 x 550 ft. and is to be ready for use within 90 days. The heat treating building is to be one story and 35 x 150 ft.

The Bonsfield Woodenware Company, Bay City, Mich., has been incorporated for the continuation of its woodenware business, the capital stock being $125,000. The stockholders are C. J. Bonsfield, A. E. Bonsfield, R. E. Bonsfield, Charlotte R. Hannum and Emma B. Darby.

The Cable-Nelson Piano Company, South Haven, Mich., has begun work on a two-story addition that will add one-sixth to the floor capacity of the factory. The addition extends from the present building to the railroad track and will be about 80 ft. deep, of the same general style of design and construction as the main factory building. October 1 is the date set by the company for occupying the new part.

The proposed pumping station at Verona, Mich., to supply the city mains of Goguac, Mich., with water from the Verona wells will cost the city from $20,000 to $30,000, according to an estimate furnished the city Common Council by Superintendent Brigden, of the Board of Public Works. Two centrifugal pumps are proposed for the auxiliary station, the building, about 20 x 20 ft., to be of brick with metal roof.

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The county road commissioners of Manistique, Mich., are in the market for a stone crusher large enough for any purpose and of the portable type.

The Forest Hill Elevator Company has been incorporated at Forest Hill, Mich., with a capital stock of $15,000. Otis A. Post is president and Elmer A. Post secretary and treasurer.

The plant of the Detroit, Mich., Reduction Company at French Landing was wrecked last Wednesday morning by an explosion of one of the garbage incinerating tanks. The loss of the building is about $125,000 and valuable machinery which it contained was damaged beyond repair.

It is announced that the Olds Motor Works, at Lansing, is to have a new addition that will increase the facilities of the plant about 50 per cent., made necessary by increasing business. The contemplated addition will include three stories and a basement, 74 x 750 ft., and will be used for the assembling of frames, complete motors and machine parts. The testing and shipping facilities will also be improved.

The Water & Electric Light Commission of Lansing has under consideration the installation of an air lift to increase the city's water supply. Besides the air lift it will be necessary to construct a reservoir of over 1,000,000 gal. capacity.

The city of Battle Creek, Mich., desires proposals for a filter plant of 4,000,000 to 8,000,000 gal. capacity per 24 hours. Information may be had by addressing F. M. Metcalf, M. E., Battle Creek.

A large addition to the building occupied by F. W. Prentiss & Co., Adrian, Mich., manufacturers of screen doors, is under construction. The new addition will make this one of the largest factories in the city.

W. T. Webb, representing the Richmond Iron Works Corporation, Richmond, Va., recently paid a visit to Grand Rapids, Mich., looking up prospects for the possible location of a branch of that company there. Mr. Webb said that while the company is now manufacturing the Virginian automobile, it is intended to go into the truck manufacture, and it is proposed to have a branch in Michigan within a year, either in Detroit or Grand Rapids.

The Harrow Spring Company, Kalamazoo, manufacturer of steel and springs, is contemplating quite a number of additions to its rolling mill division, consisting of extensions to its 9-in. and 11-in. mills, greater rolling capacity and increasing its water supply plant.

The South

LOUISVILLE, KY., August 22, 1911.

Although the naturally dull season is having an effect on the volume of business being handled, the situation is comfortable, and a satisfactory record in point of sales is being made by machinery manufacturers and dealers. Inquiries for refrigerating equipment continue coming out in large number, and it is expected that manufacturers of apparatus of this kind will have their hands full during the fall and winter. There is a better demand for machine tools, and the number of shops in Louisville and vicinity is continuing to grow.

S. Weber & Son, Louisville, who have conducted a scrap-iron business for a long time, have entered the used machinery trade. They have purchased the business of Herman Joseph, dealer in scrap and second-hand equipment, and intend developing the latter line considerably.

The Henry Vogt Machine Company, Louisville, Ky., is planning to make additions to its plant within the next few months. The company is now asking for separate prices on 14 and 16-ft. heavy boiler roll to handle ¾-in. plate, and a jolt-ramming machine, 60 x 72 in., with a capacity of 18,000 lbs.

The Sunny Brook Distilling Company, Twenty-eighth street and Broadway, Louisville, said to operate the largest distilling plant in the country, has installed a machine shop, most of the equipment for which has been purchased. The purchases include a lathe of Greaves, Klusman & Co. manufacture and a Smith-Mills shaper. A drill press was also ordered.

The Mengel Box Company, Louisville, has ordered a 100-ton track scale for installation at its Hickman, Ky., plant. The scale will be one of the largest ever installed in this territory. E. D. Morton & Co., Louisville, made the sale.

The Kentucky Public Elevator Company, Louisville, which operates one of the largest grain elevators in the South, has announced plans for the expenditure of $100,000 in enlargements and additions. Power and conveying equipment will be required. Oscar Fenley, president of the National Bank of Kentucky, is head of the elevator company.

R. O. Rubel, Jr., & Co., who have a factory for the manufacture of aeroplanes at 130 North Fourth street, Louisville, will file articles of incorporation shortly, it is stated. R. O. Rubel, Jr., has purchased the interest of his partner, E. L. Gray, in the business. A wood-working department has been installed and equipped with a planer, band-saw, cut-off saw, etc.

V. Neirmaier, proprietor of the State Street Brewery, of New Albany, Ind., is to erect an ice factory in connection with his brewing establishment, and will be in the market for equipment in the near future.

The American Machine Company, Louisville, reports a heavy demand for elevators, for both freight and passenger service. Contracts have been received recently from the Bell Bros. Piano Company, Muncie, Ind.; Old Crow Distillery, Glen Creek, Ky.; B. F. Avery & Sons' branch warehouse at Atlanta, and the Eminence Distillery Company, Eminence, Ky.

C. J. Walton & Son, Louisville, have installed a 150-hp. boiler in the sawmill of the Edward L. Davis Lumber Company, Louisville.

The Greenbaum Distilling Company has purchased a coal-crushing and conveying outfit for installation at its Midway, Ky., plant, from the Jeffrey Company, Columbus. The sale was made through Fred Wehle, the Louisville representative of the company.

The Midway Lighting Company, Midway, Ky., is making some improvements in its plant. Contracts have been let for the installation of an engine, additional dynamos, etc. The changes are to be completed by September 15.

The Kentucky Traction & Terminal Company, Lexington, Ky., has decided upon the erection of an ice factory in connection with the large power house which it is preparing to erect. The cost of the latter will be $500,000. F. W. Bacon is vice-president of the company.

The Franklin Mining Company, Marion, Ky., which is developing a deposit of fluorspar in the Crittenden County field, has purchased an Ingersoll-Rand air compressor and air tools. The sale was made through the Brandeis Machinery & Supply Company, Louisville.

The Peerless Mfg. Company, Louisville, maker of grates, has purchased an Ingersoll-Rand air compressor for installation in its foundry.

The D. E. Hewitt Lumber Company, Huntington, W. Va., has purchased a tract of 17,000 acres of fine poplar and oak, and will erect a band-mill at Huntington for the manufacture of the logs.

The list of machinery wants of the Livermore Chair Company, Livermore, Ky., the incorporation of which was recently noted, includes a 72 in. x 16 ft. boiler and two engines. K. J. Meyer is president of the company.

The State Board of Control of Charitable Institutions, Frankfort, Ky., has under consideration plans for the construction of an electric railway from Hopkinsville to the Western Kentucky Insane Asylum. If the plan is approved some additional equipment will be installed in the power-house at the asylum. The estimated cost of the line is $55,000.

The Harlan Commercial Club, Harlan, Ky., is developing a plan for the organization of a stock company to erect a water-works plant.

C. C. Hinton, Evansville, Ind., who is building a sawmill at Bowling Green, Ky., will require electric equipment, having decided upon that character of drive for the mill. J. Rowland Madison is in charge of the construction of the mill.

James C. Lawrence, Memphis, Tenn., is designing the plant of the Forest Products Chemical Company, recently incorporated with $100,000 capital stock for the utilization of the waste products of wood-working plants and sawmills. The company is in the market for equipment for a 120-hp. power plant, still, condensers, etc.

The municipal officials of Gallatin, Tenn., have closed a contract with the Crocker-Wheeler Company, Ampere, N. J., for practically all of the machinery to be installed in the water works and electric light plants. The equipment includes one 125-k.v.a. engine-type generator, one 100-k.v.a. heated-type generator, with switchboards and accessories; two 50-hp. Crocker-Wheeler motors; two Alberger centrifugal pumps, 250 gal. per min. capacity; one 50-gal. pump and motor, and one 4-valve, non-releasing, 180-hp. Corliss engine. The contract price was $8,165. A site for the plant has been secured, and work will start at once.

The Knox County High School Board, Knoxville, Tenn., has decided upon the enlargement of the manual training department of the Knoxville high school, and

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will probably require additional wood-working machinery and machine tools.

The Nashville Adding Machine Company, Nashville, Tenn., which is headed by Charles Wales, inventor of a patented device, has acquired a temporary factory building in Nashville, formerly occupied by the Hinds Shoe Company. The final designs of the machine are being worked on, after which machinery will be ordered and manufacture begun on a large scale. The company intends to have its machines on the market by the spring of 1912.

James and Harry Cox, Detroit, Mich., have purchased the Big Stone Gap Machine Shop, Big Stone Gap, Va., and have installed additional equipment. They have also equipped a foundry with a capacity of five tons a day. Automobile repair work is to be made a feature, and machine tools for this have been installed. The business, which will be conducted under the name of Cox Bros., was brought to Big Stone Gap through the Board of Trade.

L. H. Gammon, Mayor of Bristol, Tenn., has recommended that the City Council consider the question of establishing an electric light plant. He suggests that the consumption of current by the municipality would justify the erection of a plant costing $200,000.

The Watauga Power Company, which is completing the construction of a hydroelectric plant near Bristol, Tenn., is now installing machinery, practically all of which is of Westinghouse manufacture. The power house has been completed. The company will begin to deliver power in Bristol, September 15.

The Jackson Lumber Company, Jackson, Tenn., is in the market for machinery for the manufacture of cigar boxes. G. O. Worland is manager of the company.

The Jackson Ornamental Iron & Bronze Works, Jackson, Tenn., is in the market for steel and wire-working machinery. It is also equipping a department for plating operations.

The Johnson City Traction Company, Johnson City, Tenn., has made plans for the enlargement of its power plant. A new boiler house is being erected, and contracts will be let shortly for two additional boilers. A new turbine has already been purchased. The company is anticipating the probable construction of an interurban line between Johnson City and Jonesboro, Tenn.

The Marathon Motor Works, which recently succeeded to the Southern Motor Works, Nashville, Tenn., is in the market for a few machine tools, and expects to issue quite an extensive list later. Its present requirements are one plain grinder, 6 x 30 in., Landis or Norton; some lever arbor presses, 3½ in., Greenerd preferred; one 24-in. surfacer, one 36-in. band saw, one mortiser and one LaPorte broaching machine No. 4 or No. 5.

St. Louis

ST. LOUIS, MO., August 19, 1911.

In the machine tool market there has been quite a notable improvement, in a general way, in consequence of a considerable number of purchases of selected machinery, though no large lists have made their appearance and no large individual orders have been placed. Inquiries are beginning to come in and there seems to be every prospect that September will be a good month. Most of the business of the present month has been inside the city, the inquiries and purchases from outside territory having been limited. The sales of the past week have included a number of American tools, Cleveland open side planers, Kempsmith milling machines and Reliance bolt cutters.

Inquiries are out from the Missouri Pacific, the Wabash and the Missouri, Kansas & Texas Railroads for locomotives of various sizes and types aggregating about $2,500,000 in all, with prospects of the complete requirements being closed within a short time.

The Wabash is in the market for an outfit of machine tools for its new roundhouse and local repair shop at Decatur, Ill.

The McKinley Traction Cultivator Company, whose plan to erect a plant in St. Louis was recently announced, is in the market for its machinery and has placed a part of its order.

Construction work has been begun on the plant of the Matthews-Davis Company, which is to manufacture the Davis expansion boring tool and the new equipment required will be placed soon.

The American Brake Company is rapidly finishing the extensive improvements in its large North Broadway plant, and the additional equipment required is being ordered and placed as received.

The Hall & Brown Wood Working Machinery Company, manufacturing a large line of planing mill machinery, reports an excellent run of business in that particular line.

The steel foundry and air-compressor departments of the Curtis & Co. Mfg. Company are reported especially active at the present time on recently received orders.

The Fulton Iron Works, plant on the western city limits is being pushed toward completion, and in consequence of plans to make it thoroughly modern it will install a large amount of new equipment. The plant will, when completed, have the largest gray iron foundry in St. Louis.

The Columbia Incandescent Lamp Company, which recently built a new plant on the western city limits, tripling its capacity, has moved into the new buildings.

The American Oil Refining Company, St. Louis, has purchased a five-acre site near Belleville, Ill., and has issued $250,000 bonds with which, in addition to the capital in hand, it will construct a large oil refinery.

The Brooks-Latta Automobile Company, St. Louis, has purchased a site in St. Louis and will at once build a plant for the manufacture of automobile delivery wagons. The company, which is new, has $150,000 capital stock. Charles E. Brooks is president, Allen T. Latta, vice-president; Charles Latta, secretary and treasurer.

The Imperial Clock Company, which recently moved to St. Louis from Illinois, has begun the construction of a new factory building to increase its manufacturing capacity and will equip it with additional machinery.

The Tuller Mfg. Company, Kansas City, Mo., has been incorporated with $50,000. The incorporators are B. H. Tuller, W. L. Correll and F. M. Hayward.

The Grand Haven Mining Company has been incorporated in Arizona with $25,000 capital stock, but will operate in the Joplin, Mo., district, and will equip its property with mining machinery at once.

The Boehnker Motor Plow Mfg. Company, St. Charles, Mo., has been incorporated with $24,000 capital stock and will equip a plant for the manufacture of a patented plow. The incorporators are H. H. Boehnker, Louis Ringe, J. C. Wilbrand, and others.

The Car Mfg. Company, Kansas City, Mo., has increased its capital stock from $50,000 to $150,000 for the purpose of increasing its mechanical capacity.

The Commonwealth Steel Company is modernizing its plant at Granite City and will erect a new machine shop, new electrical department, chemical laboratory, engine roundhouse, blacksmith shop and pattern shop.

The city of Kirkwood, Mo., voted August 19 on the question of issuing bonds for the construction of a plant for supplying electricity to the city lights and also to the residences and business buildings.

Visiting buyers from Wichita Falls, Tex., the past week bought equipment for a complete machine shop at that point, from St. Louis dealers, scattering their orders to several dealers.

The machine shops of the Wabash Railroad at Moberly, Mo., suffered a fire loss of $15,000 as a result of a boiler explosion.

The Standard Machine Mfg. Company, Carthage, Mo., has purchased foundry and machine works of the Stout-Park Company, of that city. The company has made alterations to the plant and will manufacture well-drilling machines and deep-well power pumps of a new design. The company is planning to build a new plant after the first of next year.

The Pacific Coast

SAN FRANCISCO, CAL., August 16, 1911.

Sales of machine tools are limited almost entirely to tools of a small nature, with scarcely any inquiry for heavy equipment. A number of shops in this vicinity are considering plans for expansion, but such plans are by no means complete, and present conditions do not seem very favorable for their consummation. More business is coming from the oil fields than from any other single locality. The Government will take figures September 5 on a list of tools for the Mare Island Navy Yard, but otherwise there is nothing of special interest in the market.

The feature of the machinery market is an extremely active movement of small equipment of nearly all descriptions, with comparatively little business in heavy machinery. This is most noticeable in the line of pumps, one local manufacturer reporting that, while

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nothing of much individual importance is under construction, the demand for small units is stronger than ever before. The mines, for the most part, are using small electrically driven pumps, which can be distributed to better advantage than the large units formerly used, and the same tendency is noted in irrigation.

The placing of orders by the Yosemite Lumber Company is the only item of much interest in woodworking machinery, though there is a fair demand for single machines in various parts of the State. There are, however, a few important inquiries for mill machinery, as well as for hydroelectric equipment, on which business is expected within a few weeks. Rock-crushing machinery is less active than last summer, as the capacity of plants installed at that time is apparently in excess of requirements.

It is reported that the Santa Fé carshops at Richmond, Cal., are to be enlarged in the near future.

The Corliss Gas Engine Company is working on plans for the installation of a foundry in connection with its shop at Petaluma, Cal.

Dredging operations in California are more active than for some time, both in connection with placer mining and in harbor work. The Standard American Dredging Company has taken another large contract in southern California, and is furnishing considerable work to local shops in the way of repairs and extra parts. A number of large steel cutter-head castings for this company have been made by the C. L. Best Gas Traction Company, the machine work being done by the Union Iron Works.

The North Star Iron Works, this city, has moved its plant from Folsom street, near Ninth, to 1311 Harrison street.

The Summit Copper Company has selected a site for its proposed ore mill near Miami, Ariz., where it will install a large crushing and screening outfit, and an electric light and power plant.

The city of Honolulu, T. H., is planning to install an auxiliary pump in the municipal waterworks, with a capacity of 3,000,000 gal. per day.

The Telluride Power Company, now operating in Colorado, is planning to install a hydroelectric plant of 3000-hp. capacity on Cleve Creek, Nev.

The Sperry Flour Company is planning a new mill to be erected at Vallejo, Cal.

A. L. New is in San Francisco to place orders for mining machinery for his property in Mexico.

The city of San Bernardino, Cal., is taking figures on electrically driven pumping equipment.

The United Iron Works, San Francisco, has taken an order for a pumping station for the town of San Mateo, Cal.

The Board of Supervisors of Los Angeles County are considering figures on a power plant for the Hall of Records Building, the lowest bid being $15,735.

The distribution of agencies formerly held by Renshaw, Bulkley & Co., this city, is about complete. B. J. Smith, formerly head of the machine tool department of that company, has taken over the agencies for the American Tool Works Company, the John Steptoe Shaper Company, Greaves, Klusman & Co., Mitz & Merrill, the Kempsmith Mfg. Company, W. F. & John Barnes Company, and a number of other tool manufacturers. Mr. Smith is now associated with the Rix Compressed Air & Drill Company, and in conjunction with that firm will carry a stock of lines represented at 219 Spear street. The Austin Weston Company has opened its office at Front street and Broadway, and the Lidgerwood Mfg. Company has opened an office at 773 Monadnock Building, in charge of T. L. Williams. The Berlin Machine Works will be represented by C. H. Mitchell.

The Southern Pacific Railroad shops at Sacramento, Cal., will build 2500-hp. engines for two new ferry boats which will be put in service next summer.

The Trent Engineering Works, Reno, Nev., has a contract for a large ore mill at Virginia City, Nev.

The Western Water Company, operating near Taft, Cal., is preparing to install two 250-hp. gas engines to drive its pumping equipment.

The Horton Portable House Company has completed plans for a factory to be erected at Wilmington, Cal.

A new air compressing outfit is to be installed at the Omega mine, near Nevada City, Cal.

C. F. Braun & Co., 503 Market street, San Francisco, Cal., has been organized to take over the business of Braun, Williams & Russell at that address. The company's new officers are Carl F. Braun, president; George C. Singletary, vice-president, and Emory Singletary, secretary.

The Portland Commercial Club, Portland, Ore., announces the acquisition for that city of a big branch plant of the Berlin Machine Works, Beloit, Wis. The company has secured a site in the heart of the city comprising about 11 acres, and will soon begin the erection of a plant which will duplicate the one at Hamilton, Ont., with some improvements. The Berlin Company has been developing its trade in the Orient and has selected Portland on account of its shipping facilities and its proximity to the woodworking industry.

Texas

AUSTIN, TEXAS, August 19, 1911.

Deterioration of the cotton crop during the last week, due to insect pests in some sections and an unbroken drought in others, is having a depressing effect on business. The prospects for an unusually large cotton production, however, are very bright. Machinery trade is holding up well, particularly in the western and southern portions of the State, where the wonderful strides of growth and development continue unabated. An improvement of conditions in Mexico is looked for soon.

The Missouri, Kansas & Texas Railroad is planning a number of improvements for its yards at Greenville, to include the erection of a new roundhouse and machine shop.

A large system of irrigation is to be installed near Alpine by H. J. Gray, of that place, and associates. It is planned to construct a dam which will be 800 ft. wide at the base, 1800 ft. at the crest and 80 ft. in depth. This structure will be built of reinforced concrete and will form a storage reservoir sufficient to water 23,000 acres of land. A town will be laid out upon the property which the syndicate has purchased.

Joseph Whala is erecting a grist mill and cotton gin near Hockley, Texas.

The stockholders of the Brenham Cotton Mills, of Brenham, have decided to rehabilitate the mill and place it in operation this fall. Considerable new machinery will be installed.

The Smithville Light, Power & Water Company, Smithville, will sink two 10-in. artesian wells to supply the town with pure drinking water.

The Farmers Gin Company has been organized at West, Texas, with a capital stock of $14,500. The incorporators are F. E. Denton, C. W. Cowan and E. Lumpkin.

C. T. Jackson will install new machinery and make other improvements to the cotton oil mill at Cleburne, which he recently purchased.

The Cherokee Saddlery & Harness Company has been organized at Jacksonville with a capital stock of $30,000 for the purpose of manufacturing saddles and harness.

G. S. Combs, of San Antonio, and associates will install an irrigation system upon a tract of 1200 acres of land that they have bought near Luling. A pumping plant will be installed and a water supply obtained from the San Marcos River.

The corn shelling plant of Harry Landa at New Braunfels that was recently destroyed by fire here will be rebuilt.

The Clay County Cotton Oil Company has formed at Henrietta with a capital stock of $67,000. The incorporators are W. B. Worsham, J. B. Dale and E. P. Neville.

The Italian Gin Company has been formed at Highlands with a capital stock of $9,800. The incorporators are Vincenso Tusa, Jr., Tony Loria and Joe Louise.

The J. E. Pierce Gin & Milling Company, Blessing, has been formed with a capital stock of $5,000. The incorporators are J. E. Pierce, A. B. Pierce and John H. Roach.

D. B. Chapin and associates, who are preparing to construct a great system of irrigation near Del Rio, Texas, at a cost of about $4,500,000, will also erect a large cotton factory in connection with the irrigation and cotton growing enterprises.

A. J. Perlstein and associates will install a cotton gin at Beaumont at a cost of about $5,000.

Work is now in progress erecting the building for the electric power plant that is to be installed by the Federal Government at the site of the proposed dam at Elephant Butte, N. M. The machinery will cost about $100,000. William C. Beatty is superintendent of construction.

The Mexico Northwestern Railroad Company will install machine shops, foundry, roundhouse and car re-

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pair shops at Madera, state of Chihuahua, at a cost of $1,500,000. The extension of this railroad that is now being constructed between Terrazas and Madera will be finished by December 1.

La Union, S. A., will install a large amount of machinery in its soap factory at Torreon, Mexico. O. G. Neumann is manager.

The El Paso Electric Railway at El Paso is increasing the capacity of its power plant about 40 per cent. and will install new machinery, the improvements to cost a total of $300,000.

The Southern Steel Products Company, Dallas, manufacturer of metal specialties, is about to erect a new factory building in which new machinery will be installed.

Eastern Canada

TORONTO, ONT., August 19, 1911.

Expressions of surprise at the sustained activity of trade and industry at the high line are very frequently heard in these days of hot political campaigning. The elections are still between four and five weeks distant, but they very greatly occupy the public mind. Not only are people's thoughts much taken up with the subject but the interests at stake are commercial and industrial. If the government receives a fresh lease of power the reciprocity agreement will be established between Canada and the United States. While this agreement relates chiefly to natural products there are some manufactured products covered by it. In these the competition of the United States would be increased on the Canadian market. By facilitating the exportation of Canadian raw material, such as lumber, wheat, meat animals, minerals, etc., to the United States the arrangement may cause some difference to the Canadian manufacturing plants utilizing such raw material. For this reason it might be supposed that there would be some hesitation in the operation of these Canadian industries at the present time. In similar situation manufacturers have been known to shut down some time before elections so as to give what they wish to be regarded as a foretaste of the effects if the policy to which they are opposed should be carried. There is certainly no sign of any tactics of that kind for the influencing of the vote. The further fact that business is much less lively in the United States at the present time than it is when at its best is also commented on as having no effect to cause a slowing down here. There is not an unfavorable feature in the current trade of Canada.

Up to September 15 tenders will be received at the office of the chief engineer of the Department of Railways and Canals, Ottawa, for the construction of the Greysborough-Country Harbor line.

The City Council of Ottawa has at last decided to place with Laurie & Lambe, of that city, the contract for the erection of a Heenan Froude type of garbage destructor.

A large American company, of which the name has not yet been given to the public, has written to the Publicity Commissioner at Ottawa making inquiry as to the prospects for locating in Ottawa a branch of its power generating machinery works and of raising $1,000,000 capital there on account of such works.

The Monarch Knitting Company is enlarging its plant at Chatham, and worsted and machinery to manufacture worsted goods will be shipped from Keighley, Yorkshire, England, on September 1. Machinery is costing $48,000.

It has been decided by the publicity bureau of Ottawa to recommend that a by-law be submitted to the ratepayers to authorize the expending of $75,000 upon factory sites.

The Kennedy Construction Company, with a capital stock of $250,000, has been incorporated. Its headquarters are in Montreal.

The Mann Axe Company, St. Stephen, N. B., formerly the Maritime Edge Tool Company, has expended $40,000 in the improvement of its plant there.

The Harbor Commissioners of Montreal have decided to make an extension to the grain elevator now under construction, so as to bring its capacity up to 1,772,000 bushels. The equipment will be of the most modern character.

A bridge to cost about $300,000 will be built by the Government of Nova Scotia across the reversing falls at St. John City, where the existing suspension bridge has reached an age at which its abandonment has become advisable.

The National Cash Register Company has secured options on properties in the northern part of Toronto, on which it is proposed to build a factory on the model of the company's factory in Dayton, Ohio. The company has now a plant in Toronto in which 150 hands are employed. Twice as many would be employed in the new works.

A building site has been bought in Toronto by a real estate firm that is said to be acting for Rockwood & Co. of New York. The company is credited with the intention of building a six-story factory for the manufacture of chocolate in Toronto.

The Jules Motor Company will begin work on the construction of its plant in Guelph toward the end of September.

The New Brunswick Portland Cement Corporation is about to be incorporated for the purpose of utilizing the oil shales in Albert County, N. B., for the manufacture of cement. Senator Domville, Rothesay, N. B., is at the head of the undertaking.

Three tenders from British firms have been received by the Canadian Department of Public Works for the carrying out of the proposed harbor improvements at Courteney Bay, St. John, N. B. The contract includes dredging work, the building of the docks for the Grand Trunk Pacific, and the construction of a drydock and ship repair plant. It is estimated that the work will cost about $4,000,000. The British firms are that of Sir John Jackson, that of Norton Griffiths & Co., and that of Sir Weatman Pearson. Each tender was accompanied by a deposit of $500,000.

The contract for the dam of the new city reservoir, Moncton, N. B., has been given to John W. McManus & Co. for $128,000.

Merritt Bros. of Woodburn, Ont., are arranging to establish a basket factory in St. Catherines, Ont.

Shearer, Brown & Wills, St. Paul, Montreal, are erecting three large buildings for the manufacture of bolts and nuts in connection with the new plant of the Canadian Tube & Iron Company. The latter company has just received from the London Machine Tool Company, Hamilton, Ont., a turning lathe 10 tons in weight.

The Diamond Flint Glass Company, Hamilton, Ont., has begun the construction of a new building to cost $50,000.

The Rhodes-Curry Company, Amherst, N. S., has begun the construction of the new general office building for the Intercolonial Railway at Moncton, N. B. It is to cost $100,000.

Plans have been accepted by the city of Windsor, Ont., calling for 640 ft. of 60-in. steel water pipe in the bed of the Detroit River. It will cost about $30,000.

The Board of Governors of Hamilton Hospital, Hamilton, Ont., has decided to add to the equipment and will buy one feed pump and two vacuum pumps for boilers.

Machinery of a total value of about $100,000 will be required for the branch works the Schacht Auto Company's Canadian offshoot is establishing in Hamilton, Ont.

The Spectator Publishing Company and the Herald Publishing Company, both of Hamilton, Ont., are making additions to their plants, and will be in the market for linotype machines and other equipment.

The Sawyer Massey Company, Hamilton, Ont., is making two additions to its existing agricultural implement factory.

The Otis-Fensom Elevator Company, Toronto, is about to call for tenders for the building of a $50,000 factory in Hamilton.

Ritchie & Rumsay, New Toronto, have prepared plans for addition to factory.

The Reinhardt Salvador Brewery, Ltd., is about to build a large brewery in Toronto.

The Tallman Brass Company, Hamilton, Ont., is building a new factory.

Tenders will be received up to August 28 by the municipality of St. Jerome, Que., for complete hydro-electric power and distribution system.

The Fire, Police and Jail Committee, Hamilton, Ont., contemplates the purchase of an automobile and motors for fire trucks.

W. E. Seagrave, Walkerville, Ont., has obtained the contract of the city of Toronto for new fire fighting apparatus.

The Positive Clutch & Pulley Company, Ltd., Toronto, Ont., has completed plans for a factory building which it will erect at Aurora.

The Gem Knitting Company, Ltd., has been incorporated at Woodstock, Ont., with a capital stock of $100,000 to manufacture knitted goods. K. W. Harvey.

THE MACHINERY MARKETS

G. E. Mahon and W. W. Barrowclough of Woodstock are the incorporators.

The Verity Plow Company, Brantford, Ont., is planning to make additions to its plant which will double its capacity.

The Woodstock Automobile Mfg. Company, Ltd., has been incorporated at Woodstock, Ont., with a capital stock of $50,000 and will establish a plant there. The directors are Alexander C. Applebaum, Herbert H. Thorpe and H. F. Greene.

The Waterous Engine Works Company, Brantford, Ont., will build an extensive addition to its plant at an estimated cost of $60,000.

Western Canada

WINNIPEG, MAN., August 19, 1911.

In western Canada more is heard of preparations in the United States to push trade more aggressively in Canada if the Knox-Fielding pact is established. It is reported that prices on American articles of machinery and equipment are being quoted on a basis that seems likely to secure much business. The West will absorb a vast amount of such apparatus in the next few years. The construction activity of the last five years there has been chiefly in the way of railroad building and town expansion. In the near future there will be a very large extension of hydro-electric systems, and unless the tariff conditions are made less favorable there will be a great development of manufacturing industries at several western Canada centers.

The Sandstone Brick & Sewer Pipe Company, with a capital stock of $80,000, has completed its plant in Calgary, Alberta, and begun to turn out product.

The Puget Sound Lumber Company, Victoria, B. C., has let the contract for a new refuse burner 121 ft. high and 33 ft. in diameter. The Muskegon Boiler Company of Muskegon, Mich., has the contract, which is to be carried out for about $25,000. Several other improvements are contemplated.

M. J. Costello, general traffic manager for the Great Northern Railway Company, stated in Vancouver some days ago that his company is going ahead with plans of improvement in British Columbia that will call for an expenditure within the next two years of from $7,000,000 to $10,000,000. Three docks will be built, new depots and terminals will be constructed at Vancouver.

Elliott Bros., Minneapolis, have the general contract for the erection of the cold storage plant for the Canadian Swift Company at Fort William.

The Kenora Mining Record, Kenora, Ont., says that plans are being completed for the establishment there of large iron smelting works to be operated by electricity. It mentions Cawthra Mulock, a Toronto capitalist, D. L. Mather, a Winnipeg capitalist, and D. C. Cameron, Lieutenant-Governor of Manitoba, as the leading spirits in the enterprise. It says that $30,000,000 will be expended on the development of water power and the construction of plant. The iron fields to be drawn from are about 20 miles south of Dinorwick, on the Canadian Pacific Railway main line, not far away from the Atikokan range.

The Canadian Bread Company, Winnipeg, is about to erect a bakery plant to cost $250,000.

The car shops of the B. C. Electric Railway Company, New Westminster, B. C., are busy turning out new passenger cars, flat cars, box cars and working on repairs. There are 115 men employed in the shops.

The city of Calgary, Alberta, is preparing to instal a sewage disposal system. It has recently awarded a $200,000 contract for the construction of a trunk sewer.

The city of Kamloops, B. C., is preparing to spend $200,000 in developing 5000 hp. on the Barrier River.

The total value of the buildings for which permits have been issued this year in Winnipeg is $14,368,650.

The contract for the waterworks of Burnaby, B. C., has been awarded to Evans, Coleman & Evans, Vancouver, B. C. The pipes are to be supplied by Stewart & Lloyd, England. The Robertson, Godson Company, Vancouver, supply the valves. The total cost of the work is to be $160,000.

Washing chimney gases to eliminate smoke and dust is practised at a cocoa works at York, England. The pea slack coal used averages about 40 per cent. dust. A fan draws the gases from the boilers and discharges them through a relatively short stack. Before reaching the stack the gases pass through a brick lined chamber in which water sprays are located and in which by the use of baffles the gases are made to take a tortuous path. About 1 gal. of water is used for 300 cu. ft. of hot gases treated per hour, and about 15 per cent. of the water used on the gases entering the chamber is hot. In 24 hr. 1600 lb. of grit has been collected, or about 1.5 per cent. of the weight of the coal burned.

Reinforced concrete construction for industrial buildings costs 6.4 per cent. less than fireproofed structural steel and 6.7 per cent. more than mill construction, according to J. P. H. Perry in a paper presented to the National Association of Cement Users. The figures are based on buildings of various sizes erected in different parts of the country. Cases are cited of steel buildings costing 10 to 13 per cent. more than the concrete structures and of concrete buildings costing even 27 per cent. more than mill construction.

The N. P. Bowsher Company, South Bend, Ind., recently finished the installation of considerable new machinery in connection with its steam plant. This includes a new heavy duty Corliss engine, oil and steam separators, Swarthout water gauges, etc. A fine new dry lumber storage has also been provided, with departmental racks for piling all the different sizes used in the company's business. Cement walkways in yards were also built, and the entire plant was sewered and drained. In the spring the company will put in a new boiler and live steam feed water purifier.

A shear for cold cutting blooms of 6 x 7½-in. cross-section and of metal having a shearing resistance of 64,000 lb. per square inch is in use at the Oeking Steel Works at Düsseldorf-Lierenfeld. The machine thus requires a working force of over 1400 tons. As described in Stahl und Eisen, it is electrically driven by a 90-hp. motor, and has two flywheels each weighing 6600 lb. The total weight of the machine is about 60 tons.

Depreciation of electrical properties has been given special study by Henry Floy, consulting engineer, New York, and at the June meeting of the American Institute of Electrical Engineers he contributed a paper which has been called a classical treatment likely so to stand for some time. He compiled tables of the percentage depreciation to be allowed to the detail component parts of a plant handling electricity, such, for example, as air compressors, arc lamps, belting, boilers, breeching, coal and ash-handling machinery, paving, piping, stokers, telephones and track. The paper in full may perhaps be obtained from the Institute, 29 West Thirty-ninth street, New York.

Adelbert Sauer, president of the Sauer Power Generating Company, 5115-19 Rosetta street, Pittsburgh, has been granted American patents and also patents in England, Canada, Germany, and France, covering the Sauer improved steel turbine. The company is now trying to locate a new plant for the manufacture of the turbines in greater numbers than its present facilities permit, in addition to its line of patented shaft bearings, gas burners, etc. It proposes to build generators in sizes from 1 hp upward, for a variety of uses. The Sauer Company intends increasing its capital stock to take care of increased business and will shortly hold a board meeting to decide where its new plant will be located.

An infringement suit brought against the Houston, Stamwood & Gamble Company, maker of steam engines and boilers, Cincinnati, Ohio, by the Casey-Hedges Company, Chattanooga, Tenn., was dismissed on July 8 by Judge A. M. Cochran, of the United States Circuit Court of the Eastern District of Kentucky, on the ground that there is no infringement. The question arose over steel casings, especially those for boilers set with Dutch ovens.

The Westinghouse Electric & Mfg. Company now has 8500 stockholders against about 2800 five years ago.

Current Metal Prices.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Refined iron:
1 to 1⅞ in. round and square.... ₩ lb 1.70¢
1½ to 4 in. x ⅝ to 1 in.....
1½ to 4 in. x ¼ to 5-1 ..... ₩ lb 1.80¢
Rods—⅝ and 11-16 round and square. ₩ lb 1.80¢
Angles: Cts. ₩ lb.
3 in. x ¼ in. and larger.....1.90¢
3 in. x 3-16 in. and ⅛ in.....2.30¢
1½ to 2½ in. x ⅛ in.....2.05¢
1½ to 2½ in. x 3-16 in. and thicker....1.95¢
1 to 1¼ in. x 3-16 in.....2.05¢
1 to 1¼ x ⅛ in.....2.10¢
⅞ x ⅛ in.....2.20¢
¾ x ⅛ in.....2.30¢
⅝ in. x ⅛ in.....3.45¢
½ x 3-32 in.....3.90¢
Tees:
1 in.....2.35¢
1¼ in.....2.20¢
1½ to 2½ x ¼ in.....2.00¢
1½ to 2½ x 3-16 in.....2.10¢
3 in. and larger.....2.95¢
Beams .....1.90¢
Channels, 3 in. and larger.....1.90¢
Bands—1¼ to 6 x 6-16 to No. 8.....2.10¢
Burden's "H. B. & S." iron, base price....2.95¢
"Burden's Best" iron, base price.....3.15¢
Norway bars .....3.60¢

Merchant Steel from Store—

per lb
Bessemer machinery.....1.90¢
Toe calk, tire and sleigh shoe.....2.50@3.00¢
Best cast steel, base price in small lots.....7¢

Sheets from Store—

Black

	One pass, C.R. soft steel.	R. G. cleaned.
No. 16.....	₩ lb 2.45¢	2.75¢
Nos. 18 to 20.....	₩ lb 2.50¢	2.85¢
Nos. 22 and 24.....	₩ lb 2.55¢	2.95¢
No. 26.....	₩ lb 2.60¢	3.05¢
No. 28.....	₩ lb 2.95¢	3.30¢

Russia, Planished &c.

Genuine Russia, according to assortment .....₩ lb 12 @14½
Patent planished, W. Dewees Wood.....₩ lb A, 10¢; B, 9¢ net

Galvanized

Nos. 12 and 14.....₩ lb 2.75¢
No. 24 .....₩ lb 3.10¢
No. 26.....₩ lb 3.30¢
No. 28.....₩ lb 3.60¢
No 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized
Nos. 22 and 24.....₩ lb 5.50¢
No. 26.....₩ lb 6.00¢
No. 28.....₩ lb 7.00¢

Corrugated Roofing—

2½ in. corrugated.	Painted.	Galvd.
No. 24.....	₩ 100 sq. ft...$3.75	$4.70
No. 26.....	₩ 100 sq. ft... 2.85	3.90
No. 28.....	₩ 100 sq. ft... 2.50	3.65

Tin Plates—

American Charcoal Plates (per box)
"A.A.A." charcoal:
IC, 14 x 20.....$6.65
IX, 14 x 20..... 7.90
A. charcoal:
IC, 14 x 20.....$5.60
IX, 14 x 20..... 5.70

American Coke Plates—Bessemer—
IC, 14 x 20.....107 lb.....$4.50
IX, 14 x 20..... 5.50

American Terne Plates—
IC, 20 x 28 with an 8 lb. coating.....$8.70
IX, 20 x 28 with an 8 lb. coating.....10.70

Seamless Brass Tubes—

List November 13, 1908. Base price. 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price. 18¢

Copper Tubes—

List November 13, 1908. Base price. 21¢

Brazed Brass Tubes—

List February 1, 1911. 19½¢ ₩ lb

High Brass Rods—

List February 1, 1911. 14⅜¢ ₩ lb

Roll and Sheet Brass—

List February 1, 1911. 14⅜¢ ₩ lb

Brass Wire—

List February 1, 1911. 14⅜¢ ₩ lb

Copper Wire—

Base price, Carload lots mill 14¢

Copper Sheets—

Sheet copper hot rolled, 16 oz. (quantity lots) .....₩ lb 18¢
Sheet copper cold rolled, 1¢ ₩ lb advance over hot rolled.
Sheet copper polished 20 in. wide and under, 1¢ ₩ square foot.
Sheet copper polished over 20 in. wide, 2¢ ₩ square foot.
Planished copper, 1¢ ₩ square foot more than polished.

METALS—

Tin—

Straits pig .....₩ lb 50 @51 ¢

Copper—

Lake ingot .....₩ lb 14 @14¼¢
Electrolytic .....₩ lb 13¾@14 ¢
Casting .....₩ lb 13¾@14 ¢

Spelter—

Western .....₩ lb 6⅞@ 7⅛¢

Zinc—

No. 9, base, casks..₩ lb 8½¢ Open..₩ lb 8¼¢

Lead—

American pig .....₩ lb 5¼@5⅜¢
Bar .....₩ lb 6⅞@6¾¢

Solder—

½ & ½, guaranteed.....₩ lb 28½@28¾¢
No. 1 .....₩ lb 26½@26¾¢
Refined .....₩ lb 24¾@25⅛¢
Prices of solder indicated by private brand vary according to composition.

Antimony—

Cookson .....₩ lb..@ 9¾¢
Hallets .....@10 ¢
Other brands .....9@ 9½¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 aluminum (guaranteed over 99% pure), in ingots for remelting.....21¢ and 22¢
Rods and Wire.....Base price 31¢
Sheets .....Base price 33¢

Old Metals—

Dealers' Purchasing Prices Paid in New York.

	Cents.
Copper, heavy and crucible.....10.75 to 11.00	
Copper, heavy and wire.....10.50 to 10.75	
Copper, light and bottoms..... 9.50 to 9.75	
Brass, heavy ..... 7.25 to 7.50	
Brass, light ..... 5.75 to 6.00	
Heavy machine composition..... 9.25 to 9.50	
Clean brass turnings..... 7.00 to 7.25	
Composition turnings ..... 8.00 to 8.25	
Lead, heavy 3.75	
Lead, tea 3.50	
Zinc, scrap 4.00	

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